Representations to the Draft Submission Local Plan 2030
Transport Report

October 2018
Contents

1 INTRODUCTION............................................................................................................................... 5

2 THE PROPOSAL .............................................................................................................................. 8

   Pedestrians & Cyclists ...................................................................................................................... 11
   Vehicular Access & Bypass ................................................................................................................ 11

3 ACCESSIBILITY AUDIT .................................................................................................................. 13

   Site Location ................................................................................................................................... 13
   Public Transport Strategy ................................................................................................................ 14
   Accessibility by Non-vehicular Modes ............................................................................................. 15
       Walking ...................................................................................................................................... 15
       Cycling ...................................................................................................................................... 15
   Existing Public Transport Provision ................................................................................................ 16
       Bus .......................................................................................................................................... 16
       Rail .......................................................................................................................................... 17
   Local Highway Network .................................................................................................................. 17
   Summary ......................................................................................................................................... 19

4 POLICY CONSIDERATION ................................................................................................................ 20

   National Planning Policy Framework 2012 .................................................................................... 20
   National Planning Policy Guidance ................................................................................................. 22
   Local Policy ..................................................................................................................................... 22
       Bedford Borough Council Local Plan 2035 – Draft Local Plan, January 2018 .......... 22
       Bedford Borough Council Local Transport Plan ................................................................. 23
   Local Transport Plan 3 ..................................................................................................................... 24
       Transporting Bedford 2020 ......................................................................................................... 24
   Draft Local Plan Supporting Documents ....................................................................................... 25
       Garden Village Topic Paper – January 2018 ........................................................................... 25
       Garden Village Topic Paper – September 2018 ....................................................................... 26

5 REVIEW OF EVIDENCE BASE .................................................................................................... 27

   SYSTRA Evidence ............................................................................................................................ 28
       Review of ‘Development Option Assessment: A6 Corridor Study’ (April 2017) .. 29
       Review of ‘Site Appraisal Summary’ (January 2018) ............................................................ 32
   Garden Village Topic Papers ........................................................................................................... 33
       Review of Garden Village Topic Paper (January 2018) ............................................................ 33
       Review of Garden Village Topic Paper (September 2018) ....................................................... 34
   Summary ......................................................................................................................................... 35

6 TRANSPORT STRATEGY .................................................................................................................. 37
Figures

Figure 3.1 - Site Location in Local Context
Figure 3.2 - Local Cycle Map
Figure 3.3 - Local Highway Network
Figure 6.1 - Mobility as a Service
Figure 6.2 - Cycle Sharing Hub
Figure 6.3 - Next Bike Locations across UK
Figure 6.4 - Potential E-Bike Hire Hubs
Figure 6.5 - E-Bike Cycling Isochrones
Figure 6.6 - Car Club Car
Figure 6.7 - Car Pooling Case Study
Figure 6.8 - Transport Hierarchy
Figure 6.9 - Potential Bus Corridors
Figure 6.10 - Community Hub Example
Figure 6.11 - DRT App Example
Figure 6.12 - Potential Rail Station at Milton Ernest
Figure 6.13 - Bedford Modern School Private Transport Catchment
Figure 6.14 - Movement at Twinwoods
Figure 7.1 - Key Junctions

Appendices

Appendix A - Transporting Bedford 2020 Theme 2 Mitigation Measures
Appendix B - Trumpington Household Survey
Appendix C - Cycle Sharing & Car Club Examples
Appendix D - Indicative DRT Scheme
Appendix E - Beneficial Effects of Travel Planning Examples
Appendix F - Movement at Twinwoods
Appendix G - TRICS Output
1 INTRODUCTION

1.1 Vectos is retained by Bedfordia Developments Ltd & Marcol Industrial Investments to assist with the promotion of a new garden village at TwinWoods, east of Milton Ernest in Bedfordshire. The scheme has the potential to deliver around 6,000 homes in a sustainable location that would form a natural outlaying settlement to Bedford.

1.2 Prior to Vectos’ involvement in the TwinWoods project Bedford Borough Council (BBC) supported the principle of a new garden village and had proposed to allocate a site at Colworth to fulfil this role. However, Colworth has now been disregarded by BBC as explained in Lichfields’ Bedford Local Plan Representation.

1.3 Up until January 2018 TwinWoods was considered a realistic alternative but is rejected within the September 2018 Garden Village Topic Paper, albeit with no reasonable justification provided. This document carefully investigates the basis of this decision in transport terms and demonstrates that it is misconceived. We are informed by Lichfields that BBC’s decision to reduce the Local Plan period to 2030 (and disregarding a garden village) is flawed and contrary to policy.

1.4 Related to this, the wrong forecast is now used (technical work undertaken by SYSTRA use a 2035 end of plan year whereas the updated draft Local Plan only applies up to 2030.) Furthermore, if the further mitigation measures identified in this and the previous transport representations are required, BBC have dismissed these on the basis that they are not deliverable (Garden Village Topic Paper September 2018, 9.6) rather than the correct test of are they developable (NPPF Part 6; footnotes 11 -12). Even if only one of these mitigation measures for example is needed, there has been no attempt by BBC to address them and therefore no reason to dismiss TwinWoods on this basis (Planning Practice Guidance ID: 11-018).

1.5 Development of a 6,000-home new garden village will be developed over a long period likely extending to around 24 years. As such, with development taking place over such a long period of time it is difficult, if not impossible, to accurately forecast the level of traffic movements so far in the future. Nor is it certain exactly what form of mitigation will be
appropriate, nor when it should be provided. For this reason, the development at TwinWoods is ideally suited to a ‘Monitor and Manage’ approach.

1.6 The ‘Monitor and Manage’ strategy will complement the development proposals and will comprise a detailed strategy that identifies potential mitigation measures, real-time targets for movement/mode split, reactive monitoring, and subsequent management. Management will take the form of implementation of the identified measures when and if they are needed only. This approach is justified where, as is the case here, even using SYSTRA’s estimation of future traffic generation the site is still clearly ‘developable’ in terms of Government advice. As is demonstrated in this report, the Secretary of State has recently approved such an approach in respect of Arkall Farm, a development of 1,000 new homes in Staffordshire.

1.7 Given that the site at TwinWoods can provide a desirable place to live and work, the Local Plan is unsound in its reasoning behind the dismissal of TwinWoods as a new garden village by BBC.

1.8 As part of the representations submitted for the allocation of TwinWoods as a garden village site within the emerging Local Plan 2035, in 2017 an Extended Transport Strategy was prepared by Matrix (March 2017). This tested a series of scenarios on the local highway network, contained a public transport strategy, and set out potential highway capacity improvements.

1.9 This document adds to the strategy set out within the Matrix report, and importantly this updated transport strategy focuses on travel by all modes and reducing the need to travel in the first instance in line with national policy and changing attitudes, thereby alleviating some of BBC’s initial concerns regarding the capacity of the A6 corridor.

1.10 This report identifies the fundamental failings of the final conclusions made by BBC in excluding any garden village site within the emerging Local Plan 2030. None of the technical evidence prepared for the previous draft Local Plan iteration gainsaid the promoters’ case that TwinWoods is developable as a garden village. To our knowledge no changes have been made to this evidence in order to justify removing a garden village entirely from the new draft Local Plan.

1.11 This report is structured as follows:
• **Section 2** – The Proposal – this section describes the development proposals;
• **Section 3** – Accessibility Audit – this section summarises the current accessibility of the site by all modes, and the proximity to local services and facilities;
• **Section 4** – Policy Consideration – this section provides a review of relevant national and local policy and how TwinWoods accords with current policy;
• **Section 5** – Review of Evidence Base – this section contains a review of the Local Plan evidence base;
• **Section 6** – Transport Strategy – this section outlines the transport vision for the site;
• **Section 7** – Trip Characteristics – this section sets out the expected trip characteristics by all modes of travel; and,
• **Section 8** – Summary and Conclusion.
2 THE PROPOSAL

2.1 The TwinWoods scheme seeks to provide 6,000 dwellings over 24 years; 775 (years 1-6), 1,675 (7-12), 1,8975 (13-18), 1,575 (19-24). There is also provision for a food store, retirement home, four primary schools, a secondary school, offices, and medical centre, the majority frontloaded to create and realise community benefits as early as possible.

2.2 The proposal takes advantage of its excellent location, masterplans it, and develops it in such a way that reinforces sustainable mobility and social inclusion. Residents and visitors of TwinWoods and the surrounding community will have a genuine choice in the way they get mobility, in accordance with the behavioural and psychological factors in Section 6.

2.3 The strategy draws on the advice within the NPPF (July 2012), and particularly that under the heading ‘Promoting healthy and safe communities’ at paragraph 91 onwards, and ‘Promoting sustainable transport’ at paragraph 102 onwards.

2.4 In this respect, the transport strategy is designed to enable this strategic development to come forward in such a way that a healthy, socially inclusive community, is formed, with easy access to day-to-day facilities by a variety of means, and ensuring adjacent communities also benefit from the delivery of the scheme.

2.5 The aim is to achieve these characteristics, generally in this order of priority:

- Local healthy living
- Good use of virtual mobility (including internet-based access to facilities including shops, friends and workplace, with associated ‘last mile of travel’ facilities)
- A high propensity for active travel (walking and cycling, including electric cycling)
- Shared travel (incorporating private shared travel and targeted public shared travel through demand responsive facilities and traditional buses)

2.6 The mixture of uses creates good opportunity for local living and local movement.

2.7 There have been no changes to the development proposals from those set out in the Regulation 19 representations for the Local Plan to 2035. The Garden Village Topic Paper (January 2018) and supporting SYSTRA documentation therefore considers development...
proposals that have remained the same through to the updated Local Plan 2030 process, and the later Garden Village Topic Paper (September 2018).

2.8 The proposals for the sustainable residential development at TwinWoods include in the order of 6,000 dwellings, employment, primary schools, a secondary school, medical centre, a local centre and other associated facilities. The preliminary development schedule is contained in Table 4.1.

Table 4.1 – Development Schedule

<table>
<thead>
<tr>
<th>Land use</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>Up to 6000 units</td>
</tr>
<tr>
<td>Employment</td>
<td>19,510 sqm</td>
</tr>
<tr>
<td>Primary Schools (Four)</td>
<td>1,100 pupils</td>
</tr>
<tr>
<td>Secondary School</td>
<td>1,620 pupils</td>
</tr>
<tr>
<td>Medical Centre</td>
<td>8 GPs</td>
</tr>
<tr>
<td>Village Centre</td>
<td>2,400 sqm</td>
</tr>
<tr>
<td>Food Store</td>
<td>3,000 sqm</td>
</tr>
</tbody>
</table>

2.9 The development will encompass the existing Twinwoods Business Park and, in combination with the other land-uses proposed, the site will largely function as a self-contained garden village.

2.10 The transport package for TwinWoods is set out in more detail in Section 6.

2.11 There are four key stages to creating a socially inclusive community, thereby encouraging community interaction (within and neighbouring the scheme), in such a way to encourage non-motorised travel modes, prioritising walking and cycling, followed by use of the bus.

2.12 Design is in terms of creating communities, where public interaction, outdoor and indoor, is the norm. Where friends and day-to-day activities are nearby and easy to get to, and where it is not an automatic reaction when leaving home to get into a car. The site is well placed to take advantage of the proximity of a range of day-to-day facilities.

2.13 The site design is of a pedestrian scale; walking, cycling, and using a bus, will be easy, and vehicle intimidation will be at a minimum.
2.14 **Choice** is in terms of providing the **infrastructure** and facilities to minimise reliance on any single option. This widens social inclusion, and for instance, on average, makes contributing to commuter car congestion more of a choice and less of a necessity.

2.15 Through increased choices a change in behaviour can be effected. The proposals will introduce and maintain any sustainable transport options through the measures detailed in the remainder of this section, and seek to encourage a net travel behavioural change.

2.16 **Behaviour** is in terms of educating people in the options and consequences. It brings together awareness, health, environment and personal convenience.

2.17 Finally, one of the ‘by design’ aims is to create an environment where less people automatically choose to use their cars when leaving their homes, therefore decreasing the impact on the road network. These proposals strive to not only influence the traffic impact of the proposed development, but also the surrounding communities.

![Transport Triangle](image)

2.18 **Network Management** is in terms of managing the road network in accord with the user hierarchy preferred by BBC. Car travel is the lowest capacity network in terms of space occupied per person. It also occupies the lowest priority in the user hierarchy. This means, for instance, prioritising the reliability and speed of bus and cycle movement over that of cars in the commuter peaks.

2.19 Manual for Streets (MfS) and Manual for Streets 2 (MfS2) is used as a framework for the design philosophy, encompassing a comprehensive movement strategy which will inform and shape the layout of the streets serving the development. In particular, the movement
strategy will focus on the movement hierarchy within MfS2 with priority given to pedestrians, cyclists, and other vulnerable road users.

2.20 The indicative masterplan is included in the Development Statement (Lichfields, October 2018).

**Pedestrians & Cyclists**

2.21 The aim is to provide an environment in which pedestrians and cyclists will feel as though they are generally of highest priority. Pedestrian routes will be direct, convenient and attractive, and contribute to the sense of place created by the design and layout of the site. The development will seek to maximise and enhance the permeability of the site to cyclists and aim to encourage cycling as a mode of transport for short trips.

2.22 The development will incorporate local existing Public Rights of Way within its internal design, optimising their attractiveness and allowing pedestrians and cyclists to permeate into the rest of the site. The remainder of the site will provide the necessary pedestrian and cycle infrastructure to encourage walking and cycling and the appropriate road cross sections and speed limits to support this. Additionally, it is proposed to introduce a new super-cycleway link to Bedford, which would provide a direct connection between the site and the town.

2.23 Footpath connections to the existing network of Public Rights of Way would be located in the southwest and northeast corners of the site.

2.24 Within the site there will be shared surfaces within the residential blocks, to provide a high-quality walking experience. Also included in the current masterplan is a 10km circular leisure route around the site.

**Vehicular Access & Bypass**

2.25 Vehicular access is proposed at a number of locations and primarily from a new road link forming a bypass for Milton Ernest. This would re-route the A6 through TwinWoods thus providing a significant benefit to the residents of Milton Ernest, returning the village to a rural, undisturbed settlement.
2.26 The road network within the site will be designed in detail to reflect the local character areas with primary, secondary and tertiary roads.
3 ACCESSIBILITY AUDIT

3.1 A concise summary of the site’s current accessibility by all modes of travel is provided in this section. One of the key factors to be taken into consideration when assessing a site for development is the proximity, accessibility, and connectivity in relation to key local facilities by non-car modes. In the case of a new garden village, TwinWoods is designed for 24-hour living, these facilities being provided within the site and therefore the opportunity for travel by non-car modes for day-to-day needs are paramount. In this way a garden village has the potential to be more sustainable than an urban extension as habits can be influenced from the outset.

3.2 The accessibility of the site is exemplified within the supporting documentation prepared by SYSTRA, who conclude that the site is in fact the best placed of the then four proposed garden village sites for connectivity with Bedford. TwinWoods scores highest on accessibility in the SYSTRA Site Appraisal Summary (January 2018).

3.3 The draft Local Plan 2035 based its garden village principles on the Town and Country Planning Association Garden City principles. Garden Cities are defined as containing:

- Strong cultural, recreational, and shopping facilities in walkable, vibrant, sociable neighbourhoods; and,
- Integrated and accessible transport systems, with walking, cycling, and public transport designed to be the most attractive forms of local transport.

3.4 TwinWoods meets these principles.

Site Location

3.5 The site covers an area of 490ha to the north of Bedford. It is located to the east of the village of Milton Ernest and lies approximately 5km directly to the north of Bedford (centre of the site). The site location in the context of the local area is displayed in Figure 3.1 below.
In line with best practice, as well as local and national policy, the development proposals will include a highly attractive public transport strategy to connect the site directly with Bedford and Bedford rail station, as well as the local area, making it convenient to travel to Milton Keynes, Northampton, Cambridge, and London, amongst other destinations, via public transport.
3.7 The strategy and proposals will have considerable benefits in terms of promoting social inclusion for both existing and future residents in the local area north of Bedford.

3.8 Discussions are currently ongoing with a local bus service provider to develop a highly efficient strategy for public transport at TwinWoods.

3.9 In addition to traditional commercial bus services, demand responsive transport services (DRT) are being investigated as part of the package for TwinWoods. More information on DRT is provided in Section 6.

3.10 The site envelopes TwinWoods Business Park which is proposed to remain to be incorporated within the wider site, with the remaining land comprising adjoining agricultural land. A small number of the existing land uses around the business park are proposed to be retained. This includes the Red Bull buildings and Yarls Wood IDC.

3.11 The A6 runs to the immediate west of the site which forms a strategic road link through Bedford, between Luton in the south and Carlisle in the north. The site also links to more rural highway links to the north of Bedford.

**Accessibility by Non-vehicular Modes**

**Walking**

3.12 Thurleigh Road currently has no provision for pedestrians. However, there is a network of Public Rights of Way, largely comprising public footpaths, in and around the site. This currently connects TwinWoods to the surrounding area.

3.13 Twinwood Road connects the south-west of the site to Clapham, approximately 2.5km away. This road benefits from a paved, segregated pedestrian lane. In Clapham itself, pedestrian provision is good. Roads generally have footways on both sides of the carriageway and good street lighting is available.

**Cycling**

3.14 Cycling in the local area to the site is currently in its infancy; the local area comprises mostly rural settlements and therefore no dedicated infrastructure is currently provided. Cycling provision in Bedford itself is also in its infancy but is rapidly progressing. Hence there is
plenty of opportunity to enhance cycling accessibility to and from the site, particularly via connections with Bedford.

3.15 National Cycle Network (NCN) Route 51, which runs through Bedford on traffic-free paths. The new cycleway would connect the site to this, and therefore present opportunities to cycle to destinations across a wider area.

3.16 The local cycle provision within Bedford is illustrated in the following Figure 3.2.

**Figure 3.2 – Local Cycle Map (extract from BBC cycle map)**

```
<table>
<thead>
<tr>
<th>Key</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numbered cycle routes</td>
</tr>
<tr>
<td>on main roads</td>
</tr>
<tr>
<td>on quieter roads</td>
</tr>
<tr>
<td>off-road</td>
</tr>
<tr>
<td>Radial route start/end point</td>
</tr>
<tr>
<td>Radial route number</td>
</tr>
<tr>
<td>Avenue route (Orbital route)</td>
</tr>
<tr>
<td>Bedford Green Wheel</td>
</tr>
<tr>
<td>Connecting cycle routes on road</td>
</tr>
<tr>
<td>Traffic-free shared path alongside road</td>
</tr>
<tr>
<td>Traffic-free shared path away from road</td>
</tr>
<tr>
<td>On-road cycle lane</td>
</tr>
<tr>
<td>Bus lane available to cyclists</td>
</tr>
<tr>
<td>Unsurfaced track or bridleway</td>
</tr>
<tr>
<td>Pedestrianised street in town centre</td>
</tr>
<tr>
<td>(cycling permitted between 8pm and 11am)</td>
</tr>
<tr>
<td>Footway (cycling may not be permitted)</td>
</tr>
<tr>
<td>National Cycle Network (NCN) route 51</td>
</tr>
</tbody>
</table>
```

**Existing Public Transport Provision**

**Bus**

3.17 The closest bus stop to the site is The Queen’s Head, in Milton Ernest. This is serviced primarily by the 50 route, which runs between Bedford and Rushden. The provision of bus services is outlined in Table 3.1 below.
<table>
<thead>
<tr>
<th>Service</th>
<th>Route</th>
<th>Direction</th>
<th>Times and Typical Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 (Daily)</td>
<td>Bedford – Rushden</td>
<td>Bedford</td>
<td>0613-1947 1 per hour</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rushden</td>
<td>0705-2038 1 per hour</td>
</tr>
<tr>
<td>825 (School Service)</td>
<td>Clapham – Oakley – Milton Ernest – Radwell – Felmersham – Sharnbrook</td>
<td>Sharnbrook</td>
<td>0800 1 per day</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Clapham</td>
<td>1536 1 per day</td>
</tr>
<tr>
<td>VL4 (Second Tuesday of each month only)</td>
<td>Thurleigh – Milton Keynes</td>
<td>Thurleigh</td>
<td>1317 1 per day</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Milton Keynes</td>
<td>0905 1 per day</td>
</tr>
<tr>
<td>VL14 (Third Monday of each month only)</td>
<td>Felmersham – Huntingdon – St Ives</td>
<td>St Ives</td>
<td>0907 1 per day</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Felmersham</td>
<td>1533 1 per day</td>
</tr>
</tbody>
</table>

3.18 The ‘VL’ buses are part of a local community minibus scheme, ‘The Villager’, which is managed and driven by local volunteers.

**Rail**

3.19 Bedford rail station is the closest rail station to TwinWoods. Currently, this is approximately a 6.5km walk or cycle, however the implementation of the new super-cycleway between TwinWoods and Bedford would improve the connection.

3.20 Bedford station is on the Thameslink and East Midlands line, offering services to key Central London stations, Gatwick Airport, and Bletchley. The station benefits from 588 covered cycle parking spaces, and has CCTV monitoring. Car parking is also available.

**Local Highway Network**

3.21 The local road network to the site is detailed within Figure 3.3.
3.22 Thurleigh Road, which runs through the north western portion of the site, is the main highway connection between the site and the surrounding area. TwinWoods Business Park is accessed from Thurleigh Road.

3.23 The A6 forms a key strategic link north-south between Carlisle and Luton. In the local area it runs through the centre of Bedford and links the site to Kettering to the north, to the A4280.
with onward links towards Cambridge and St Neots, as well as to the A428 which in turn links to Northampton and Milton Keynes.

Summary

3.24 The site’s current location is predominantly rural yet is already well related to the edge of northern Bedford. The implementation of a well-designed garden village at this location would intrinsically improve access to Bedford as well as key destinations further afield. The sustainable travel links in this area north of Bedford would also be significantly improved for existing residents and could help to improve existing travel habits, whilst influencing new residents and workers at the site.

3.25 SYSTRA’s documents prepared to form a technical evidence base for the Local Plan 2030 corroborate that TwinWoods is the best placed of all four garden village sites considered in early 2018, with the most potential for connections with Bedford by sustainable modes of travel.
4 POLICY CONSIDERATION

4.1 In terms of policy consideration, this report is guided by the principles within Lichfields’ Bedford Local Plan Representation, of which the key policies and guidance are as follows:

- National Planning Policy Framework 2012
- Planning Practice Guidance

4.2 The proposed development is to be considered in the context of the relevant national planning policies, as well as publications relevant to the proposed strategic settlement in north Bedford. We also comment in this section on the policies in the draft Local Plan (including the previous iteration of it) insofar as they are relevant to transport matters.

National Planning Policy Framework 2012

4.3 The Framework sets out the Government’s planning policies for England. It provides guidance for local planning authorities on Plan-making and when taking decisions on planning applications.

4.4 At the heart of the Framework is a presumption in favour of sustainable development. The planning system should play an active role in guiding development to sustainable solutions.

4.5 The Framework sets out three dimensions to sustainable development – economic, social, and environmental – with the planning system to perform a number of roles:

- An economic role – contributing to building a strong, responsive and competitive economy, ensuring that sufficient land of the right type is in the right places;
- A social role – supporting strong, vibrant, and healthy communities with accessible local services that reflect the communities needs and supports its health, social, and cultural well-being; and,
- An environmental role – contributing to protecting and enhancing our natural, built and historic environment, including moving to a low carbon economy.

4.6 Transport plays a key part in the economic, social, and environmental outcomes of development. Well-designed sustainable transport solutions can ensure access to
employment, services and amenities, promote social inclusion, and promote a healthy society while minimising the impact on the environment.

4.7 A core planning principle of the Framework is to “actively manage patterns of growth to make the fullest use of public transport, walking and cycling, and focus significant development in locations which are or can be made sustainable” (para 17).

4.8 Section 4 of the Framework “Promoting Sustainable Transport” indicates that “the transport system needs to be balanced in favour of sustainable transport modes, giving people a real choice about how they travel.” It states: “...encouragement should be given to solutions which support reductions in greenhouse gas emissions and reduce congestion”, and continues: “In preparing Local Plans, local planning authorities should therefore support a pattern of development which, where reasonable to do so, facilitates the use of sustainable modes of transport.”

4.9 Plans and decisions should take account of whether:

- The opportunities for sustainable transport modes have been taken up to reduce the need for major transport infrastructure;
- Safe and suitable access can be achieved to the site can be achieved for all people; and,
- Transport network improvements can be undertaken that cost-effectively limit the significant impacts of the development and development should only be prevented where the residual cumulative impacts of the development are severe.

4.10 The Framework continues: “…plans and decisions should ensure developments that generate significant movement are located where the needs of travel will be minimised and the use of sustainable transport modes can be maximised. However, this needs to take account of policies set out elsewhere in this Framework, particularly rural areas.” The Framework then explains that Plans should exploit opportunities for the use of sustainable transport modes and lists requirements for location and design, such as giving priority to pedestrians and cyclists, having access to high quality public transport, and create safe and secure layouts (para 35).

4.11 The Framework advocates the aim for a balance of land uses so people can be encouraged to minimise journey lengths for the main creators of demand for travel, including employment,
shopping, leisure, and education. Specifically, in relation to larger scale residential development, a mix of uses should be promoted to facilitate trips for everyday activities to be undertaken on foot.

**National Planning Policy Guidance**

4.12 National Planning Policy Guidance encompasses a number of guidance documents, including those covering transport. These transport-related policies reiterate what is incorporated within the Framework regarding Transport Assessments and Travel Plans.

4.13 Section 42 of the ‘Travel Plans, Transport Assessments and Statements’ Guidance notes that Travel Plans and Transport Assessments (and Statements) can positively contribute to:

- Encouraging sustainable travel;
- Lessening traffic generation and its detrimental impacts;
- Creating accessible, connected, inclusive communities;
- Improving health outcomes and quality of life;
- Improving road safety; and
- Reducing the need for new development to increase existing road capacity or provide new roads.

**Local Policy**

**Bedford Borough Council Local Plan 2035 – Draft Local Plan, January 2018**

4.14 The Draft Local Plan included a number of overarching objectives with Objective 7 specific to transport. Objective 7 sought to:

> “Improve the borough’s transport infrastructure in order to support growth in the local economy and to make the borough more attractive as a place to live and do business. Reduce congestion in the borough, particularly into and around the town centre and by making journeys by public transport, walking and cycling more attractive to encourage an increase in more sustainable and healthy modes of transport.”
4.15 Chapter 7 described the Allocations in the draft Local Plan 2035 and included the principles of Garden Village Development. Policy 26 set out the principles to which a new garden village must conform to in order to deliver high quality sustainable development.

4.16 TwinWoods accords with those principles that are set out below:

- Deliver a step-change in the provision and use of sustainable transport systems that can encourage and incentivise more sustainable active travel patterns, putting walking, cycling and high-quality public transport networks and connections at the heart of the proposals;
- Ensure that all necessary infrastructure required to bring forward the garden village funded and delivered by the proposal, with appropriate measures being put in place where necessary to equalise the costs and land contributions. The following costs will need to be borne by landowners and those promoting the developments: (a) Securing a high-quality place making and delivery to garden city principles, (b) ensuring the timely delivery of both on-site and off-site infrastructure required to address the impact of the garden village, and (c) providing and funding a mechanism for future stewardship, management, maintenance and renewal of community infrastructure and assets; and
- Sequencing of development and infrastructure provision (both on site and off site) to ensure that the latter is provided ahead of or in tandem with the development it supports to address the impact of the new garden village, meets the needs of the residents, and establishes sustainable travel patterns.

**Bedford Borough Council Local Transport Plan**

4.17 BBC’s Local Transport Plan (LTP) was published in 2011. It sets out the long-term transport strategy for the borough, for the period up to 2021.

4.18 Paragraph 1.1.2 states the vision for transport in Bedford Borough to be:

“To create a transport system in which walking, cycling and public transport are the natural choices of travel for the majority of journeys because they are affordable, healthy, convenient and safe alternatives to the private car”.

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TwinWoods, Bedford

October 2018
4.19 The LTP has eight key strategies, which inform the delivery of the LTP. This includes an Active Travel strategy, which concerns the promotion of cycling and walking and their numerous benefits, and a Network Management strategy, which aims to provide a highway network which meets traffic demand and contributes to safer, more efficient movement by buses, pedestrians and cyclists.

4.20 Also included is a Passenger Transport strategy, which focuses on improving the provision of convenient, accessible passenger transport services, in ways which are comprehensive and sustainable. There is an aim to increase accessibility by non-car modes to key services in the area.

**Local Transport Plan 3**

**Transporting Bedford 2020**

4.21 Transporting Bedford 2020, announced in 2017, sits within LTP3 and is referenced within the draft Local Plan 2030 (12.27) under ‘Transport and New Infrastructure’. Policy 94S – Transport Infrastructure Network Improvements sets out at point 5 the new infrastructure committed as part of the Transporting Bedford 2020 project.

4.22 Transporting Bedford 2020 sets out BBC’s aspirations to improve key road infrastructure and seeks to reduce congestion and enable greater business productivity in the town by improving town centre traffic management. The main objectives are:

- Enhance the permeability of the core town centre, creating better connections between the retail quarter, the cultural quarter, and the Great River Ouse;
- Enhance the management of traffic movements into and across the town to improve journey time reliability; and,
- To significantly improve the Urban Traffic Management Control Technology (UTC) provision across the core urban area by introducing smart technology that informs travel behaviour and reacts to transport conditions, and provides travellers with real-time information about traffic and travel conditions to allow them to make informed decisions about travel behaviour.
4.23 Theme 2 of the Transporting Bedford 2020 seeks to reduce congestion and identifies key areas for highway mitigation measures to facilitate improvements to the operation of the highway network. The pinch point schemes include the A6 Northern Gateway which comprises the following:

- Signalisation of the Clapham Road/Manton Lane/Shakespeare Road junction
- Enhancement to the operation of the Paula Radcliffe Way/Great Ouse Way roundabout
- Enhancement to the operation of the Manton Lane/Brickhill Drive junction
- A review of the entrance arrangements at Bedford Modern School
- Refurbishing the signals at Manton Lane/Brickhill Drive junction

4.24 The programme for implementation of the work is proposed to commence in February 2019. A plan indicating the proposed mitigation measures is included in Appendix A.

4.25 The site at TwinWoods may benefit from some of the identified improvements set out within Transporting Bedford 2020, the following of which are identified:

- Signalisation of existing A6 at Manton Lane and link with Manton Road signals; this includes increasing capacity at Great Ouse Way (bypass)/A6 junction;
- Introduction of signals at Bromham Road to replace the current mini roundabouts;
- High Street and Town Centre improvements to the public realm, reducing traffic lanes and provision of parking spaces; and
- Modification to traffic signals to improve capacity and reduce congestion.

**Draft Local Plan Supporting Documents**

**Garden Village Topic Paper – January 2018**

4.26 Previously, BBC consulted over a new Local Plan for the period up to 2035. As part of this process, a Garden Village Topic Paper was published in January 2018, which considered the option of new strategic (garden village) settlements as part of the Plan’s strategy. Four alternatives in north Bedford were considered, one of which is TwinWoods. A comparative assessment was carried out in a ‘New Settlement Site Appraisal Summary’ report by SYSTRA in 2017.
4.27 The document purports to explain why, of the proposed garden villages, Colworth (Lee Farm, Sharnbrook) was chosen for allocation. The reasons cited for the choice of Lee Farm over TwinWoods was that the opportunities presented by the site at Lee Farm to deliver non-car trips and reduce the scale of A6 interventions scored highest in the appraisal. It was also stated that “Sharnbrook is also more closely aligned to the requirements of the NPPF”. TwinWoods was “considered to provide a good opportunity for a new settlement”, and thus considered to be developable.

**Garden Village Topic Paper – September 2018**

4.28 This document purports to provide an update to the January 2018 topic paper in response to BBC’s decision to publish the draft Local Plan 2030, which (amongst other things) reduced the Plan period from 2035 to 2030 and abandoned support for a new garden village.
5 REVIEW OF EVIDENCE BASE

5.1 As part of the 2035 version of the draft Local Plan, the possibility of a new garden village at TwinWoods was assessed and included within the supplementary Garden Village Topic Paper (January 2018)\(^1\) which informed the emerging Local Plan strategy.

5.2 The changes in wording between each Garden Village Topic Paper (January 2018 and September 2018) are set out in Lichfields’ Bedford Local Plan Representation Appendix 3 and specific reference to the changes in transport strategy are outlined.

5.3 During the preparation and submission of the January 2018 Garden Village topic paper, four garden village sites were identified and high-level assertions about their deliverability made. To inform feasibility of delivering these sites from a technical perspective SYSTRA prepared a number of reports including ‘New Settlement Site Appraisal Summary’\(^2\) of which TwinWoods was rated the best in terms of access arrangements, and second in all other categories, and ‘Development Option Assessment: A6 Corridor Study’ (April 2017)\(^3\) in order to understand the potential implications of the sites on the A6 corridor. The latter primarily focuses on the A6 north of Bedford where TwinWoods will have the greater impact. Importantly this report identifies a number of mitigation strategies to enable the combination of developments to come forward successfully. This study does not include provision of a bypass of Milton Ernest even though it forms part of the TwinWoods proposal.

5.4 In January 2018 BBC concluded in their topic paper that the TwinWoods proposal has merit and suitable for allocation future plans, but Colworth Garden Village is preferred owing to the apparent potential to reduce reliance on the car. Subsequently, and in response to BBC’s request for further information, additional representations were provided to BBC in support of TwinWoods. These representations included details of further possible mitigation measures and confirmed that a rail station could be accommodated on land at Milton Ernest which would serve TwinWoods, albeit emphasising that it was not necessary to do so to achieve the requisite level of modal shift. However, these additional representations have been used by BBC as justification to find the scheme not deliverable. This is completely non-

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\(^1\) 26 – Garden Village Topic Paper (Jan 2018)
\(^2\) 27 – New Settlement Site Appraisal Summary (Jan 2018)
\(^3\) 29 – Development Option Assessment: A6 Corridor Study

TwinWoods, Bedford

October 2018
sensical, particularly when BBC was only required to assess whether TwinWoods is developable in the first instance.

5.5 A review of the relevant SYSTRA documents and the two Garden Village Topic Papers (January 2018 and September 2018) with specific regards to TwinWoods is contained in the following section.

**SYSTRA Evidence**

5.6 As per the contents of the main representation document prepared by Lichfields, BBC has made a fundamental error in its assessment of reasonable alternatives for a garden village. BBC repeatedly assesses the prospect of a garden village being ‘deliverable’, but as per national policy, this is the wrong test; the assessment should be considering the developability of the site. As per footnote 12 of the NPPF, a developable site “should be in a suitable location for housing development and there should be a reasonable prospect that the site is available and could be viably developed at the point envisaged”.

5.7 The PPG (ID: 12-018) is also clear that later phases of the plan (i.e. when a developable site would start delivering) do not carry the same expectation regarding level of detail around infrastructure requirements as those to be delivered within the first five years:

“The Local Plan should make clear, for at least the first 5 years, what infrastructure is required, who is going to fund and provide it, and how it relates to the anticipated rate and phasing of development. This may help in reviewing the plan and in development management decisions. For the later stages of the plan period less detail may be provided as the position regarding the provision of infrastructure is likely to be less certain...” (emphasis added).

5.8 Finally, PPG (ID: 11-018) deals with how the sustainability appraisal should assess alternatives and identify likely significant effects. Although this report does not review the sustainability appraisal, it does review documents which inform it:

“The sustainability appraisal needs to compare all reasonable alternatives including the preferred approach and assess these against the baseline environmental, economic and
social characteristics of the area and the likely situation if the Local Plan were not to be adopted.

“The sustainability appraisal should predict and evaluate the effects of the preferred approach and reasonable alternatives and should clearly identify the significant positive and negative effects of each alternative...

“The sustainability appraisal should identify any likely significant adverse effects and measures envisaged to prevent, reduce and, as fully as possible, offset them. The sustainability appraisal must consider all reasonable alternatives and assess them in the same level of detail as the option the plan-maker proposes to take forward in the Local Plan (the preferred approach).” (emphasis added).

5.9 On the basis of the above, this report’s review of the SYSTRA reports considers:

- If BBC provided evidence that there is not a reasonable prospect that TwinWoods could be viably developed at the point envisaged; and,
- Where issues have been identified, considers if BBC’s evidence offers solutions to prevent, reduce and, as fully as possible, offset such issues.


5.10 This document was prepared following instruction from BBC in December 2016, and assesses the impacts and implications of the three strategic development sites to the north of Bedford on the A6 road corridor (Thurleigh Airfield, TwinWoods and Lee Farm at Sharnbrook). Wyboston garden village is not included within this assessment.

5.11 The assessment is high-level only, and notes that the current network (A6) is “known to be approaching operational highway capacity” (1.2.1). The modelling therefore only considers the road network (A6) rather than the entire mobility network, and modelling work assesses four phased scenarios measured against a reference case. The methodology for assessment is standard and encompasses the impact of strategic planning measures and wider social and economic influences (2.2.10). Where possible the date used to undertake the review was provided by the settlement promotors (2.1.3).
5.12 The A6 corridor study states that the “walking and cycling offer provided by [TwinWoods] is particularly strong in comparison to the other sites brought forward”\(^4\).

5.13 SYSTRA’s high level investigation\(^5\) estimates that the traffic impact on the A6 (north Bedford) in the 2045 scenario (no mitigation) will be 200% as a result of new developments comprising all three sites. This does not consider any mode shift to account for generation or behavioural changes, changes in technology etc, or any planned or posited road capacity improvements. SYSTRA also presents a ‘Core Forecast’ for the 2045 scenario with development at all three sites, which considers the maximum possible internalisation, redistribution of traffic to/from Bedford centre, an increase in the uptake of sustainable modes of travel and a reduction of background traffic growth. This estimates a traffic impact of 35%, without any physical interventions and mitigation strategies are applied.

5.14 Clearly this section of the A6 cannot accommodate a 200% level of traffic increase, and would not be expected to accommodate a 35% increase without mitigation, therefore SYSTRA have identified in this document a number of mitigation measures split between behavioural and mode change measures, and capacity enhancements. A summary of these is provided in the following Table 5.1.

\(^4\) Development Option Assessment: A6 Corridor Study
\(^5\) Development Option Assessment: A6 Corridor Study
5.15 SYSTRA have therefore already provided some evidence in their A6 Corridor Study document that there is a reasonable prospect of developing the site at TwinWoods at the point envisaged. These are not an exhaustive list of measures but do demonstrate that there are a range of suitable mitigation measures that complement a wider mobility strategy to support TwinWoods.

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Table 5.1 – Summary of SYSTRA Suggested Measures

- **DM1** – North Bedford Triangle: Reduce the impact on the A6 my maximising the opportunities to have new settlement traffic travel between each site.
- **DM2** – Sharnbrook Station: Provision of either a mainline or light rail station at Sharnbrook. Interconnectivity between the sites will be crucial to opening this up as an option for all residents and employees of the new settlements.
- **DM3** – Park & Ride: Provision of a new Park & Ride service from the A6 for trips into Bedford. This could be provided as a conventional system which would have implications on town centre parking or as micro-park and ride.
- **DM4** – Strategic East - West Highway Connections: opportunities to link the new settlements with planned strategic east west rail and highway links.
- **DM5** – Improvements to Cross-Country Routes: improvements to other local authority areas within the East Midlands region would increase the relative attractiveness of other residential and employment areas which would reduce traffic impact to Bedford.
- **DM6** – School Transport Co-ordination: creating a transport scheme which reduces the impact of AM traffic from schools near the A6 corridor.
- **DM7** – Manton Lane ATP: creating an Area Travel Plan for the employment, education and retail areas on and around Manton Lane could also reduce traffic demand on already at capacity junctions.
- **IC1** – Replacement of A6 / Manton Lane Roundabout: to either a grade separated or signalised junction to be able successfully distribute traffic at this existing pinch point. This could also include some form of Bus priority.
- **IC2** – Improvements to Paula Radcliffe Way / Great Ouse Way Junction: several options are explored and it is considered that a hamburger roundabout option would be ideal if the roundabout layout can be amended but full signalisation would be appropriate, subject to detailed modelling.
- **IC3** – Improvements to the ‘Sharnbrook Turn’ Roundabout: to either a grade separated or signalised junction, in anticipation of the increase in traffic expected from all three new settlements.
- **IC4** – Reconfigured Road Network: three options for a new layout of the Clapham Road, Union Street, Bromham Road and Shakespeare Road highway network to provide bus priority and reduce congestion.
- **IC5** – A6 Bus/Car Share Lane: provision of a bus or car share lane on the A6 either using one of the existing lanes or building a new lane.

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6 29 – Development Option Assessment: A6 Corridor Study
Review of ‘Site Appraisal Summary’ (January 2018)

5.16 This document also forms part of the technical evidence base for both draft Local Plan iterations (2030 and 2035) and has not been updated to inform the new emerging Local Plan 2030.

5.17 Table 11 within the document sets out the ranking criteria and Table 12 (Table 5.2 below) of this document contains the ranking for all four sites;

Table 5.2 – Summary of SYSTRA Ranking Analysis

5.18 The conclusions drawn from this ranking process are as follows;
“Whilst the site at TwinWoods is also considered to provide a good opportunity for a new settlement, at this stage opportunities presented by the site at Sharnbrook to deliver non-car trips and reduce the severity of A6 interventions score highest in the appraisal.”

5.19 This concludes therefore that TwinWoods is in fact a good site in terms of these ranking criteria. The site at Colworth (Sharnbrook) scored highest on 3 of the 4 criteria primarily due to the then proposed rail station; this has no bearing on the appropriateness of development at TwinWoods. The development at Colworth was also predicated on the basis that it must provide the station prior to any houses being built on site. This created insuperable problems in relation to viability as TwinWoods’ earlier representations made clear.

5.20 For TwinWoods, the ranking states that, “There has been little consideration for junction capacity or impact and mitigation on the A6...” but does not state that there is no opportunity to provide these assessments. Moreover, there is nothing in the findings to gainsay the promoters’ case that TwinWoods is a developable site.

**Garden Village Topic Papers**

5.21 As per the contents of the main representation document prepared by Lichfields, BBC has made a fundamental error in its assessment of reasonable alternatives for a garden village by assessing deliverability rather than developability.

5.22 As per this report’s assessment of the SYSTRA reports, our review of the Garden Village Topic Paper (GVTP) will consider:

- If the conclusions reached in the GVTP’s are based on technical evidence;
- If BBC provided evidence that there is not a reasonable prospect that the site could be viably developed at the point envisaged; and,
- Where issues have been identified, considers if BBC’s evidence offers solutions to prevent, reduce and, as fully as possible, offset such issues.


5.23 The findings of the SYSTRA reports are reflected in the January 2018 GVTP which provides a summary of the TwinWoods site as follows:
In essence it is clear in the January 2018 topic paper that the TwinWoods site was identified as having the most potential for connections with Bedford by sustainable travel modes, and by public transport. The proposed Milton Ernest bypass to be brought forward as part of this site would have the additional benefit of allowing Milton Ernest to return to a more rural settlement, as well as accommodating any additional vehicles either as part of the TwinWoods development or other development sites in the nearby area. The site at TwinWoods therefore has immense potential to deliver a socially inclusive and well-connected settlement to deliver the much-needed housing in Bedford Borough, in a garden village tone with high quality connections to Bedford.

This iteration of the GVTP therefore makes it clear that TwinWoods is in fact a developable site, based on the supporting evidence provided by SYSTRA.

**Review of Garden Village Topic Paper (September 2018)**

Developability of a garden village settlement at TwinWoods has already been deemed acceptable and even preferable by BBC within the GVTP (January 2018).

The September 2018 update does not reference any updates to the evidence-base prepared by SYSTRA, and as such a lack of proper investigation is evident.

BBC purports to explain within paragraph 9.6 of the updated topic paper their reasoning behind excluding TwinWoods from the Local Plan:

“Following the close of the Regulation 19 consultation additional information was submitted by the promoters of the TwinWoods Scheme to suggest how a range of measures could be used to reduce the impact of additional traffic on the A6. These included the potential for a railway station north of Bedford at a future date, provision of a new and direct bus link into...”
Bedford through the Woodlands Park area of the town and an electric bike scheme. However as presented, these measures were not underpinned by technical evidence to show that they could be achieved, the impact they would have is uncertain and they have not been appropriately costed. As a result there is no confidence that they could be implemented in order to reduce the traffic impact arising from TwinWoods Garden Village to an acceptable level. The additional information submitted in respect of the TwinWoods site has been placed on-lone alongside site specific material submitted at earlier.”

5.29 There are a number of issues with this statement in terms of discord with policy and lack of evidence. Firstly, the correct test at this stage is of a reasonable prospect, and whether the site is developable rather than deliverable. This statement therefore incorrectly assumes that the impact of TwinWoods would be unacceptable. In this way there is no evidence provided that there is not a reasonable prospect that the site could be viably developed at the point envisaged, and that suitable measures to reduce traffic impact can be implemented.

5.30 For example, a ‘monitor and manage’ approach could be adopted in order to develop an appropriate means of mitigation. This approach has been accepted by the Secretary of State for Arkall Farm, Lichfield (Ref. APP/K3415/V/17/3174379).

5.31 In addition, it is not clear how or if an acceptable level of traffic impact on the A6 is quantified. As stressed throughout this report, assessment of any development impact will be addressed through a ‘Monitor and Manage’ strategy.

5.32 Even if (which we do not accept) there is a problem with any impacts or measures, the test is whether there is a reasonable prospect that any impact can be resolved. This test is plainly satisfied in relation to TwinWoods as is corroborated by SYSTRA (as above).

Summary

5.33 BBC state in their September 2018 GVTP that more information is required (paragraph 9.6). However, this conclusion is tainted by BBC’s flawed approach i.e. its failure to assess developability rather than deliverability. Indeed, this information is simply not needed to determine the developability of TwinWoods. If BBC require more information, they are then trying to reach a position of certainty, and this is not then a test of reasonable prospect.
5.34 The September 2018 topic paper in fact corroborates BBC’s previous assertion that TwinWoods “has merit and may be suitable for allocation at a later plan stage”, indicating therefore that there are no perceived ‘showstoppers’ from BBC’s perspective. It is evident that no technical evidence supports the exclusion of TwinWoods, nor is there any updated information provided to change the original conclusions, which plainly identified that TwinWoods is a developable site.
6 TRANSPORT STRATEGY

6.1 The transport strategy as set out in the Local Plan 2030 has been altered from that in the Local Plan 2035 and it is clear that through the exclusion of a garden village, the transport strategy has undergone a fundamental change. No justification for this change has been provided by BBC and no technical evidence has been provided or referred to. This is in conflict with Planning Practice Guidance.

6.2 The key criticisms made in justification of not pursuing TwinWoods as a developable garden village site in the Garden Village Topic Paper (September 2018) are made at paragraph 9.6, a review of which is contained in Section 5.

6.3 BBC are hence not specific in their criticisms contained within paragraph 9.6 (or elsewhere within the updated documentation) and comment only on the additional mitigation measures. These were contained in supporting representations for TwinWoods at the request of BBC during the re-consultation for the updated Local Plan 2030 only. Providing bike sharing facilities, a bus corridor, and the potential to provide a rail station were all suggested as additional and potential mitigation measures to those already proposed as part of the site’s transport package (Matrix Extended Transport Strategy March 2017). The updated Garden Village Topic Paper incorrectly states that “They [mitigation measures] present a complete change to the Transport Strategy for TwinWoods ... At this stage it is not known whether the proposals can be delivered...”.

6.4 At this time the appropriate test is of a reasonable prospect, i.e. developability (as explained in Lichfields’ Bedford Local Plan Representation and summarised above). As such, it is not necessary to provide the underpinning evidence to support the original or additional transport proposals, although some evidence of how these schemes work is provided in the previous Matrix work and this report.

6.5 It is further proposed to prepare a ‘Monitor and Manage’ strategy at TwinWoods to deal with impacts as and when they are identified. The ‘Monitor and Manage’ strategy will complement the development proposals and will comprise a detailed strategy that identifies potential mitigation measures, real-time targets for movement/mode split, reactive monitoring, and subsequent management. Management will take the form of

TwinWoods, Bedford

October 2018

37
implementation of the identified measures if and when – and only – they are required. This ensures that any mitigation measures are fit-for-purpose and avoids unnecessary costs up-front to meet forecasted impacts as opposed to realised impacts. This is an important part of our transport strategy because of the long-term delivery of TwinWoods, so as to avoid commitment to measures (and costs) which may never be necessary, on measures which have been proposed to mitigate projected impacts.

6.6 **Section 2** outlines the likely delivery timescales of the site and given the length of the build the ‘Monitor and Manage’ strategy is the most appropriate way forward where the site is known to be ‘developable’ – as TwinWoods is.

6.7 The option of providing a bus links (raised at paragraph 9.6 in the Garden Village Topic Paper 2018) has not been raised in any previous reports or correspondence. This is additional mitigation to be implemented if necessary and is something that will be progressed accordingly at planning stage and through the ‘Monitor and Manage’ strategy.

6.8 TwinWoods is not reliant on delivery of a new rail station. Costing of a facility now, when it is not needed, is inappropriate. This can be contrasted with the situation at Colworth where delivery of a new rail station was deemed to be a pre-requisite to the delivery of any new homes.

6.9 On the basis that the test for including this site in the emerging Local Plan is ‘reasonable prospect’ and its developability, it is reasonable to investigate the exact implications (effect/cost etc) of proposed measures at the suitable time.

**Monitor and Manage**

6.10 A ‘Monitor & Manage’ approach to mitigation has been agreed with other strategic residential development sites within the UK. This strategy is ideally suited to a long-term project and it is a poor planning approach to require a development to provide infrastructure which may never be necessary, or which becomes outdated as a mitigatory measure with the passage of time and the discovery of new methods.

6.11 Outline Planning Permission for a 1,000 residential dwelling site at Arkall Farm, Staffordshire was approved on appeal by the Secretary of State which incorporates the ‘Monitor &
“Manage’ approach. This strategy was agreed with the local highway authority – Staffordshire County Council – owing to differences regarding the appropriate assessment approach between the site promoter and the local highway authority (8.1.3), and thus disagreements on the proposed highway impact of the site.

6.12 A ‘Monitor and Manage’ report (28648/5503 Rev A, December 2014) was prepared by Peter Brett Associates (PBA), incorporating a Statement of Common Ground between the relevant parties, and the site promoter (1.1.2). The requirement to agree the final mitigation strategy with the LPA is conditioned within the Decision Notice (Condition 24, APP/K3415/V/17/3174379 dated 07-Jun-2018). The site at Arkall Farm is for 1,000 dwellings and therefore has a much shorter development period than TwinWoods (Section 2), therefore the appropriateness of the ‘Monitor and Manage’ strategy for TwinWoods is all the more reasonable.

6.13 The Monitor and Manage Report takes a graduated approach to the provision of mitigation (1.2.2) and sets out the overall Demand Management strategy, including implementation and monitoring, as well as the necessary highway infrastructure improvements, as a result of monitoring targets being reached. This approach provides thresholds which negate any pre-construction methodology issues, as well as scope to monitor the impact of both the development on the network, the impact of the construction phase, and the result of introduced or even unforeseen factors.

6.14 The provision of periodic ATC, MTC, and ANPR monitoring is agreed therein, as well as trigger points for monitoring (based on occupation numbers), and the necessary thresholds for the triggering of additional measures. This also includes scope to amend or remove mitigation measures if said thresholds are not reached. The framework is proposed to be supported by a Travel Plan and Section 106 Agreement (1.2.3).

6.15 Whilst potentially disadvantageous to the site promoter, clarity of final cost estimates (1.2.1), the flexible approach provides appropriate and agreed responses to changing circumstances (notably regarding larger phased developments with longer-term build programmes), such as behaviour change and other factors, and can also factor in more indicative infrastructure mitigation (Table 1.1).
6.16 It also provides periodic and up-to-date information of the impact of the development, which could be taken forward beyond as a further data-monitoring initiative monitored by the highway authority (7.2.11).

6.17 The Inspectorate’s report states “...the Secretary of State agrees with the Inspector that the proposed Monitor and Manage approach to highways impacts, secured by condition, would provide an appropriate level of mitigation to meet actual highway conditions at the relevant future time.” (APP/K3415/V/17/3174379 dated 07-Jun-2018, para 13.)

**The Strategy**

6.18 TwinWoods will deliver a modern Mobility Strategy, delivering a step-change in transport choice and providing residents with Mobility in new and innovative ways.

6.19 Advances in technology are quickly changing the way we live, and changing how we value time, how we value possessions, and how we achieve Mobility.

6.20 The Mobility Strategy will help deliver a sustainable development, and a sustainable mode split amongst residents of TwinWoods.

6.21 A shift in the time people travel is expected, with a more dispersed trip profile with residents adjusting their behaviour to minimise their inconvenience to avoid peak periods and utilise the services and facilities at the Community Hub.

**Mobility**

6.22 Current transport trends, as reported by the Independent Transport Commission (ITC)\(^7\) are consistent with a movement strategy that relies upon the promotion of sustainable transport, in accord with paragraph 29 onwards of the Framework.

6.23 Those trends include\(^8\):

\(^7\) Independent Transport Commission: Recent trends in road and rail travel: What do they tell us? Overview and policy analysis December 2016

\(^8\) ITC December 2016 p1 and p2

TwinWoods, Bedford

October 2018
• Per capita travel in terms of distance has been decreasing significantly over the past
decade and is now 10% lower than in the mid-2000s;
• Individual car driving mileage per adult has declined significantly over the period 1995-
2014;
• The historic correlation between incomes/costs and travel are weakening
• We are witnessing an inter-generational divide in travel behaviour trends ... younger
people (especially men under 35) are the group where car use per adult is falling fastest,
but this group has also seen one of the fastest rises in public transport use; and,
• Attitudinal factors are becoming increasingly significant as drivers of travel. The ITC’s
2015 attitudinal research indicated that cars are increasingly viewed as ‘appliances not
aspirations’, especially by young people.

6.24 The ITC’s December 2016 report on travel trends is consistent with the Department for

6.25 The DfT advises in this report\(^9\) that:

• There has been a decline in commuting trips per person which has not been outweighed
by the growth in population. Commuting is in decline despite population and
employment growth\(^10\);
• Commuting behaviour is undergoing a period of change;
• Several reasons contribute to this decrease in commuting journeys;
• The emergence of various forms of flexible working;
• Workers are commuting fewer days per week;
• Working from home is growing, both on an occasional basis and on a usual basis;
• There has been an increase in the number of people who report that they are employed
but do not work at home and are not observed to travel to work during the surveyed
diary week; and
• Part time employment and self-employment have expanded, with both being associated
with reduced numbers of commuting journeys

\(^9\) DfT Executive Summary
\(^10\) DfT p5 and p15
There have been changes in the time of day of commuting, with work-bound journeys shifting on average several minutes earlier in the morning.

Car commuters experience the most variable commute times, though road traffic reliability has improved.

Transport policy, which promotes active travel and places single occupancy car use at the bottom of the movement hierarchy, is intrinsically linked to health policy. Rising obesity is caused by sedentary lifestyles, and there is now a crossover between transport and health in prioritising investment in, and use of, active (walking and cycling) travel corridors to deliver transport objectives and health objectives.

The common threads through local and national policy are:

- Mobility, access to day to day and other facilities, is fundamental to ‘liveability’
- Mobility must be provided through a plethora of realistic choices
- The highest priority travel choices are those which are most space efficient, most energy efficient, are likely to result in good community integration, and those which combat a sedentary lifestyle

Large strategic sites allow planned coordinated development and provide effective mobility infrastructure. They are best placed to achieve all of these aims. They are substantially more effective than the alternative of smaller ad-hoc and unplanned schemes.

The way that people understand mobility has changed, is changing, and will change in the future. Mobility is about accessing day-to-day facilities, such as schools, shops, friends, healthcare, and the workplace.

Mobility is a function of placemaking, an increasing awareness of the need for healthy living, internet technology, providing Mobility as a Service (MaaS), electric vehicle technology, and general cultural preferences.

Per capita travel in terms of distance has decreased significantly over the past decade, and is now 10% lower than in the mid-2000s. Each person makes significantly fewer trips now than they used to, and the car driving mileage per adult has dropped significantly. The historic
correlation between income, costs and travel are weakening, with car driving per adult declining despite motoring costs remaining stagnant. The link between economic growth and travel has weakened\textsuperscript{11}.

6.34 In terms of attitudes\textsuperscript{12}:

- Cars are increasingly viewed as ‘appliances not aspirations’;
- There is a growing body of understanding of travel options;
- Use of technology for communication and work whilst travelling is easier and safer by non-car modes;
- For business travel there is some travel substitution by home working and video conferencing; and
- There is a growing disconnection between car ownership and car use leading to a wider use of alternatives including vehicle and journey sharing.

6.35 These changes in attitude are set to accelerate, with the catalysts of the Central Government initiatives to promote healthier living, and the recently announced ban on all new diesel and petrol cars and vans by 2040.

6.36 There is an expectation borne out of emerging evidence that travel habits will continue to evolve so that a greater proportion of people will be travelling less, and using more socially inclusive mobility methods, such as walking, cycling, car sharing, and public transport.

6.37 An excellent example of where mobility measures have successfully ensured a favourable mode split at a new residential-led development is that at Trumpington Meadows. Trumpington Meadows is situated to the south of Cambridge Centre and adjacent to local employment, the site provides 1,200 new homes in a well-designed and integrated development. Links into Cambridge city centre are not dissimilar to those proposed at TwinWoods, albeit TwinWoods is slightly further away from Bedford town centre. However, the site at TwinWoods offers its own town centre facilities to cater for day-to-day needs, and hence it is reasonable to suggest that the character of Trumpington is loosely comparable. As such, there is no reason to suggest that the differences are significant enough to overlook the potential for change for better mobility roughly in line with what is seen at Trumpington.

\textsuperscript{11} Independent Transport Commission (ITC); Overview and Policy Analysis December 2016
\textsuperscript{12} ITC December 2016, Section 7; Possible Causes of Changes in Travel Patterns
6.38 The Trumpington Meadows household survey for travel habits ought to be considered relevant to judgements about what could be achieved at TwinWoods, particularly given TwinWoods’ far larger size and therefore critical mass. This survey\textsuperscript{13} indicated the following mobility characteristics:

- There is a disconnect between car ownership and use;
- People using the bus typically walk to the Park and Ride site to get it;
- The general mobility hierarchy for the journey to work, in order of preference, is: cycle, car, public transport;
- Of trips to the local primary schools 40% walk and 60% cycle. At the recently opened Community College (years 7 and 8 currently accepted) all travel by cycle or bus; and,
- The majority of people working in Cambridge city centre and the neighbouring employment area prefer to cycle to work. On occasion, usually weather-related, they will take the bus or drive a car.

6.39 The typical mode split at Trumpington Meadows for journeys to work in Cambridge City (including the neighbouring major employment site of Addenbrookes):

<table>
<thead>
<tr>
<th>Mode</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walk</td>
<td>0%</td>
</tr>
<tr>
<td>Cycle (including cycling to the station)</td>
<td>61%</td>
</tr>
<tr>
<td>Car Passenger</td>
<td>0%</td>
</tr>
<tr>
<td>Bus (including bus to the station)</td>
<td>8%</td>
</tr>
<tr>
<td>Taxi</td>
<td>2%</td>
</tr>
<tr>
<td>Motorbike</td>
<td>4%</td>
</tr>
<tr>
<td>Car Driver</td>
<td>25%</td>
</tr>
</tbody>
</table>

6.40 Full details of the Trumpington household survey is included in Appendix B.

6.41 The mode-split results above demonstrate the feasibility of achieving a low car driver proportion for a new development in a sustainable location, such as TwinWoods. Specifically,

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\textsuperscript{13} Household Interview Survey at Trumpington Meadows (28\textsuperscript{th} January 2017)
it demonstrates the real and attractive choice of mode that exists in practice, which reduces the planning importance of protecting the convenience of the car commuter.

**Mobility-as-a-Service (MaaS)**

6.42 Mobility-as-a-Service (MaaS) is at the forefront of change, and is a concept of combining services from public and private transport providers in one place which allows users to create and manage trips, which they can then pay for from a single account, typically a single app. *(Figure 6.1).*

**Figure 6.1 – Mobility as a Service**

6.43 MaaS can be delivered by a range of innovative new mobility services, complementing more established transport modes, and can include:

- bike-sharing
- car clubs
- carpooling
- demand-responsive transport
- mobility stations
- electric vehicles, including self-drive electric pods
- Connected Autonomous Vehicles (CAVs)
- active travel corridors
6.44 One single initiative will not deliver mobility, but the combination of these services and the collection of access to each service in a single location (or app) will provide people with the mobility and choice they desire.

6.45 To supplement MaaS, the proposed development will include a Community Hub, occupied by a Community Concierge Team. The Community Hub will provide a range of facilities, which could include a coffee shop, a restaurant, a gym, or retail facilities, and the Community Hub and the Community Concierge Team will provide a focal point for information in relation to all Mobility services and be on hand to provide advice to all residents.

6.46 Advances in technology and lifestyle changes mean that travel time and cost are no longer the only factors that influence people’s mobility decisions.

6.47 The MIND-sets project, an EU research project in which Vectos plays a leading role, pools sociologists, environmental psychologists and economists with sustainable mobility and travel behaviour specialists to understand the potential for increasing automation, door-to-door seamless travel, smart mobility, mobile phone apps, and on-demand services to provide people with more choice.

6.48 The research demonstrates the potential to deliver mobility in a number of different ways, and the view of mobility as simply access to a car is an outdated concept which does not reflect modern lifestyles and modern travel and behavioural choices.

**Millennials**

6.49 “The millennials don’t value cars and car ownership, they value technology — they care about what kinds of devices you own.” - Mimi Sheller, a sociology professor at Drexel University and Director of the Center for Mobilities Research and Policy\(^ {14} \).

6.50 In 1993 50% of people aged 17-20 possessed a car licence. In 2014 the proportion had reduced to 30%, reflecting the changing priorities of young people. The change in car licence possession is summarised in **Graph 6.1**.

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\(^{14}\) http://drexel.edu/coas/faculty-research/faculty-directory/sheller-mimi/
Graph 6.1 – Full Car Driving Licence Holders Aged 17-20 Years

6.51 The travel patterns and behaviour of young people is critical given the timescales for the proposed development, and the need to address and accommodate the needs of the people who will be living at the proposed development in the future rather than design and forecast based on historic travel patterns and behaviour.

**Bike Sharing**

6.52 Bike sharing schemes can make cycling as a travel mode more accessible and salient.

6.53 Bike sharing schemes can be defined as *‘short-term urban bicycle rental schemes that enable bicycles to be picked up at and returned to any self-service bicycle station, which makes bicycle-sharing ideal for point-to-point trips.’*\(^{15}\)

6.54 There are different types of schemes in place. There are schemes with or without fixed docking points, schemes with free access to members, or schemes which charge monthly or annually, pay-per-use schemes, and schemes which target a specific area and others which are city wide. The London Bike Hire Scheme has been a huge success.

6.55 A bike sharing scheme could be developed in tandem with the provision of new active travel corridors to promote and encourage cycling, either as the main mode of transport for or as part of a multi-modal journey. The bike sharing scheme will connect to public transport nodes and could be expanded to serve future developments.

6.56 The important role cycling now plays in providing mobility in cities around the world, including London, Helsinki, and Paris, and the town and surrounding villages of Randers, Denmark, is included at Appendix C.

Figure 6.2 – Cycle Sharing Hub

6.57 Next Bike have demonstrated results of their service, which have already demonstrated that 84% of rentals are under 30 minutes long, that routes tend to involve commuting between transportation hubs and work, or home and shopping. Furthermore, ‘BikePlus’ have found that 23% of their riders choose to bike share instead of use a car (UK wide).
In addition to bike sharing, there are other cycling related measures which can increase the proportion of trips undertaken by bicycle. In Paris, a voluntary scheme was passed into law whereby employees can be paid 25 cents per km (income tax exempt) to cycle to work. At the time of the initial trials, 19% of those involved said they had begun to cycle more than previously.

Technology is also bringing significant change to the cycle industry, and e-bikes are now the biggest single market sector in the cycling industry\textsuperscript{16}. In a recent trial in Randers, Denmark, 91% of participants approved of e-bikes after they had used them. Of those who used the pedal-assisted bikes 75% were women, and 70% were aged 35-54.

\textsuperscript{16} The Bike Shed, Cardiff
6.60 This demonstrates the potential of cycling to deliver Mobility. E-bike sharing at TwinWoods and in Bedford is achievable and it is proposed to deliver this as ‘Electric Bike Bedford (EBB)’. Potential bike hire hubs are indicated below with their respective walking catchments.
6.61 Considering the location of these hubs, and using an average speed of 18km/hr and a travel time of 30 minutes, the following isochrones indicate reasonable travel times by e-bike from TwinWoods (centre) and from Bedford Rail Station. This is a conservative speed and in likelihood with attractive and suitable routes, these speeds will be higher.

6.62 These isochrones demonstrate that all of Bedford is linked to either TwinWoods or Bedford within a reasonable e-cycling distance.
6.63 E-bikes are evidently an attractive choice for journeys both within the TwinWoods site and journeys between Bedford and the site. Bedford Town Centre is within a 30-minute cycle on an e-bike as demonstrated above, this is an attractive journey time.

6.64 Indicative costs for a 100-bike scheme using electric smart bikes would be £400,000. This cost includes bikes, docking stations, infrastructure, delivery, project management and installation. The monthly operational costs of circa £1000 per month based upon a 50-bike scheme. We are in discussion with Next Bike to establish a suitable strategy for bike sharing.
for the TwinWoods community and the wider Bedford area. This is simply a starting point for bike proposals.

**Car Clubs**

6.65 A car club is where several people access and drive the same vehicle. For example, several people in the same community would drive the car on different days of the week.

6.66 This means that drivers have access to cars without the need to own them. Access without ownership is becoming more common in modern-day living.

6.67 Across the UK in 2007 there were approximately 32,000 members of a car club, a decade later this figure has soared to around 250,000 members.

6.68 Studies have demonstrated that each shared car replaces between eight and eleven private cars. Car clubs are becoming more prominent in towns and cities across the UK, and car club spaces can be located strategically at key destinations, major employment sites, transport hubs, and town and city centres. The membership of car clubs is increasing, reflecting people’s changing attitudes towards mobility.

6.69 The provision of car clubs will encourage people to adopt more sustainable travel habits with the knowledge that should an emergency arise, the need to travel home quickly, or the need to run an errand, collect a parcel, or vary their journey in another way, there is a flexible option which can be used as required on-demand.
6.70 Information on examples of successful car clubs in Bath, Bristol, Bremen and Genoa is available at Appendix C.

6.71 Car clubs will form one part of the Mobility Strategy of the proposed development.

**Carpooling**

6.72 Carpooling is where a car driver will use their own personal vehicle to give lifts to other passengers, usually whose origins and destinations are similar to their own.

6.73 The potential for carpooling at TwinWoods is significant, particularly for employment trips to shared destinations at broadly similar times.
Figure 6.7 – Car Pooling Case Study

Case Study: British Gas

In 2001, British Gas relocated to a purpose-built office, where 2,000 staff were provided with only 380 car parking spaces, having previously had the perceived luxury of 2,000 spaces. Car parking was understandably a major staff issue to overcome. By providing a comprehensive car sharing solution, 70 per cent of staff shared a car daily, with staff members commending the organisation on how their finances and quality of life had improved as a result.

6.74 App-based carpooling is now taking off, and lifts can be booked on demand, reflecting modern lifestyles, removing the requirement to plan journeys well in advance to participate in an effective carpooling system. Vectos plays a leading role in the SocialCar project, an EU funded research and innovation project, which is aiming to establish carpooling as a more accessible transport mode. The project is developing and demonstrating a new mobile phone application, in ten European cities, which allows users to find carpooling options in real-time and to connect with public transport services. We expect to be able to feedback results in due course.

6.75 Vectos led the CHUMS project, an EU funded project, which took a new approach to carpooling by integrating three measures – Attract, Inform and Retain - to ensure carpooling schemes in workplaces and universities are effective. The project operated in five demonstration cities – Craiova, Edinburgh, Leuven, Perugia and Toulouse, and Toulouse achieved 58,000kms of carpooling per month through 530 registered users.

6.76 In Milton Park near Didcot, through the work of a community concierge, Liftshare membership has increased from 74 to 563 people. (7,526 employees as of 2014).

6.77 Carpooling will be a key component to the Mobility Strategy at TwinWoods.
Active Travel/Bus Corridors

6.78 Active travel corridors will be developed within the masterplan from the outset, and permeability with wider routes will be maximised. Active travel corridors will connect the development to key hubs within the site through walkable and cyclable neighbourhoods, and link residents to key amenities including Bedford.

Figure 6.8 – Transport Hierarchy

6.79 Opportunities to route buses and connect cyclists from TwinWoods into Bedford via Woodlands Park/Ashmead Road are demonstrated in Figure 6.9. Cyclists and pedestrians will benefit from a hard-surfaced formal route, designed with appropriate lighting and through attractive environments. For cyclists in particular it will form a highly convenient route to allow easy access with Bedford directly. There is potential also to upgrade the existing cycle route through Clapham to provide an attractive sustainable travel link to this part of northern Bedford and into Bedford Town Centre.
6.80 Bus prioritisation is proposed on the A6 and could take the form of bus lanes where land is available, and bus journeys could become more reliable with the use of ‘hurry calls’ (signal phase prioritisation for buses) or extended green time (UTC) at signalised junctions. Additionally, sustainable travel corridors are proposed on the routes shown above, utilising the width and cycle potential available on each link. It is proposed to work in tandem with BBC to create a wholly efficient corridor along the A6 into Bedford so that bus use between TwinWoods and Bedford is more convenient and therefore more attractive than driving into and out of Bedford. These proposals are in accordance with the Transporting Bedford 2020 project.

Community Hub

6.81 Integral to the development proposals will be the Community Hub. The Community Hub will be located in the heart of the development and provide a focal point for people to meet, interact and spend time. A Community Bike Share Hub will work within and in cohesion with the Community Hub.
6.82 The Community Hub will provide a range of facilities, potentially including a coffee shop, a restaurant, a gym, retail facilities, and a breakout area. The Community Hub will be equipped with fibre-optic wi-fi which will be free to use for all residents.

6.83 The Community Hub will effectively act as a Mobility Station – a hub where all modes of transport are available which will simplify planning and choosing how to travel. Mobility Stations are springing up in Germany, providing shorter more convenient transfers between different transport modes, and this concept can be replicated at the proposed development.

**Figure 6.10 – Community Hub Example**

![Community Hub Example](http://www.qixxit.de/blog/die-mobilitaetsstation-mobilitaet-vor-ort/)

6.84 A Transport Information Centre (TIC) will also be located at the Community Hub. The TIC will provide information in relation to bike sharing, car clubs, carpooling, demand-responsive transport, and electric vehicle charging points. Walking, cycling (active travel) and public transport maps, and public transport timetable information, will also be available.

6.85 The TIC will be operated by a Community Concierge Team, providing a physical presence and providing travel advice and assistance to all residents and visitors.
6.86 Milton Park in Didcot is currently implementing evidence-based behaviour change initiatives to make sustainable travel, cycling and car sharing the modes that people aspire to use and achieve a measurable modal shift.

6.87 The coordinated approach to sustainable transport at Milton Park has achieved a 4% reduction in single occupancy vehicle use in the first 12 months, prior to any infrastructure improvements.

6.88 Vectos helped MEPC win the ‘Best Responsible Property Investment (RPI) Environmental Sustainability Initiative’ award at the prestigious RPI Awards. Philip Campbell, Commercial Director for MEPC at Milton Park, said:

“MEPC wants to be a pioneer in future sustainable travel initiatives and technologies and a trailblazer within the region to promote health and wellbeing on the park, as well as the importance of taking care of the environment. The long-term vision for Milton Park is to continue to reduce the number of cars at the park to ease congestion not only on site, but also throughout our neighbouring communities and villages.”

Personalised Travel Planning/Area-wide Travel Planning

6.89 Personalised Travel Planning (PTP) can have a significant impact on travel behaviour and travel patterns, helping to achieve more sustainable travel practices and healthier lifestyles, which in turn contribute to a more socially inclusive community and help protect the environment. PTP can be effective both amongst existing residents and communities and in new developments.

6.90 PTP provides tailored information directly to the individual on sustainable mobility options through a one to one discussion with a PTP Adviser. The personal approach and specifically tailored information leads to a greater propensity for behavioural change than a one-size-fits-all approach.

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In tandem with a well-designed Travel Plan and appropriate and attractive sustainable travel infrastructure, PTP can result in a step-change in travel behaviour which will benefit every member of the community.

Safe routes to school will be established as part of the development design and ethos of the site from the outset, and school travel planning will be provided and offered to schools where appropriate. The intention therefore is to design school specific travel planning in cohesion with the wider community to benefit all school users.

Travel planning will be provided also for the wider area to maximise on the transport opportunities this site can bring to the local and wider areas.

PTP is proposed to be provided as part of the area-wide travel planning and can be delivered at a cost of around £22 per household. Providing this service for the existing local area including Milton Ernest, Clapham, and Oakley, as well as new residents at TwinWoods this would be a cost of approximately (indicative cost at this stage) £200,000. This has the potential to influence up to 8,000 existing residents as well as new residents of the 6,000 proposed new homes at TwinWoods.

**PTP – Cardiff Case Study**

In Cardiff the project, funded by Welsh Government, and supported by Local Authorities, targeted 63,000 households in Cardiff and Penarth in a 15-month period. Stage 1 commenced in north Cardiff in September 2011. Stage 2 was undertaken in Spring 2012 and covered the western and southern parts of the city, as well as Penarth, whilst the final stage, Stage 3, covered the east of the city, during Autumn 2012.

After control group effects had been considered, the after survey showed a 12% relative reduction in car-as-driver trips across the PTP target population, with a reduction from 45% of trips being car-as-driver trips observed before PTP, to 40% afterwards.

Use of sustainable transport modes increased significantly, with a 21% rise in walking journeys (from 24% of journeys before PTP, to 29% afterwards), 13% rise in public transport journeys (from 8% of journeys before PTP to 9% afterwards), and a 30% rise in cycling (from 2% of journeys before PTP to 3% afterwards). The modal shifts observed resulted in a 26% rise in the amount of time spent doing active travel per day (including as a linking mode in a
car or public transport trip). The drop in car-use also corresponds to a 10% reduction in distances travelled by car for everyday trips (equivalent to 31 million km per year), which generates an estimated annual reduction of 6,300 tonnes of CO2 emissions.

6.98 The complete Sustrans Report to Welsh Government, titled ‘Personalised Travel Planning in Cardiff - Final Evaluation of Intervention’ is available on request.

Sustrans PTP Results

6.99 Sustrans has also undertaken PTP in the locations summarised in Table 6.4:

<table>
<thead>
<tr>
<th>Location (date)</th>
<th>Households</th>
<th>Car-Driver Mode Shift</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gloucester (2005)</td>
<td>4,000</td>
<td>-13%</td>
</tr>
<tr>
<td>Worcester (2005 – 07)</td>
<td>23,500</td>
<td>-10%</td>
</tr>
<tr>
<td>Peterborough (2005 – 07)</td>
<td>30,000</td>
<td>-11%</td>
</tr>
<tr>
<td>Preston &amp; South Ribble (2007)</td>
<td>25,000</td>
<td>-10%</td>
</tr>
<tr>
<td>Lancaster &amp; Morecambe (2007)</td>
<td>25,000</td>
<td>-14%</td>
</tr>
<tr>
<td>Watford (2009)</td>
<td>25,000</td>
<td>-13%</td>
</tr>
<tr>
<td>Exeter (2009)</td>
<td>25,000</td>
<td>-12%</td>
</tr>
<tr>
<td>Lowestoft (2009)</td>
<td>25,000</td>
<td>-13%</td>
</tr>
<tr>
<td>Broxbourne (2010)</td>
<td>8,000</td>
<td>-10%</td>
</tr>
<tr>
<td>Ipswich (2010)</td>
<td>17,000</td>
<td>-11%</td>
</tr>
</tbody>
</table>

6.100 The results demonstrate that the PTP can achieve a mode shift away from car driver of 10% or more. Introducing PTP from the outset at the proposed development would help enhance the number of trips undertaken in a sustainable manner by new residents and could also result in a change in travel behaviour amongst existing residents.

PTP-Cycle

6.101 PTP-Cycle is a project using PTP methods to promote a shift from private motor vehicle use towards cycling, walking and public transport.

London Borough of Haringey

6.102 In the London Borough of Haringey, a team of seven travel advisors visited over 14,000 homes between May – September 2015. These seven travel advisors surveyed residents in the Haringey and St Ann’s wards, delivering 4,229 personal travel plans, with a further 306 personal travel plans delivered at events across the borough.
A follow-up survey in October 2015 revealed a 24.1% increase in the number of residents cycling across the project area, and amongst residents who cycle the average number of cycle journeys per week increased from 6.6 to 8.2. Overall the follow-up survey revealed that 23% of Harringay participants and 13% of St Ann’s participants provided with travel advice had changed one or more of their regular journeys to a sustainable mode of travel in the past two months.

Full details of the PTP-Cycle Newsletter 05 (December 2015), which reports the results of PTP-Cycle in the London Borough of Haringey, is available on request.

In the London Borough of Greenwich 3,500 residents in the Abbey Wood area were contacted about PTP. Of these residents, 2,175 (62%) were interested in receiving travel advice, and information packs were delivered to these residents. In addition, 274 people were given travel advice at local events.

A follow-up survey was undertaken in December 2014. The results demonstrated:

- 33% of respondents decreased their number of car (alone) trips;
- 6% of respondents increased their number of cycling trips;
- 42% of respondents increased their number of walking trips;
- 22% of respondents increased their number of bus trips; and
- 7% of respondents increased their number of train trips.

The results demonstrate the important role education and knowledge can play in determining travel choices, and simply making people aware of their options and alternatives can deliver significant benefits.

Demand-Responsive Transport

Demand-responsive transport (DRT) is a modern, user-orientated from of public transport, with flexible routing, pick-up and drop-off locations, and timetabling matched to passenger needs.

DRT provides the potential to provide services as and when required without the need to provide a service throughout the day at times when demand may be less. This can lead to a
more efficient and effective economic model for providing Mobility, and a more responsive form of Mobility.

6.110 In February Citymapper shared new details on its plans to “reinvent shared transportation” in London by launching a hybrid service that is part bus, part ride-hailing system.
6.111 Slide Bristol is a shared ride to work service operating in Bristol between 06:45-09:45 and 15:30-19:30, Monday to Friday. Users book their ride in advance (as little as 10 minutes before they travel) via an app\(^\text{18}\).

6.112 Ford’s Chariot is now operating in London\(^\text{19}\) allowing people to share rides. Users create an account online, then choose between a monthly pass or pay-per-trip. They enter pickup and drop-off points, and the app will then find a vehicle operating in the area to service the trip. Users simply tell the driver their name and show their two-digit confirmation code in the app.

6.113 The ever-increasing flexibility towards shared transport will contribute to mobility at the proposed development. We are currently investigating a DRT scheme for TwinWoods with one of the leading DRT operators in the UK, details of the TwinWoods DRT scheme is included in Appendix D.

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\(^{19}\) [https://www.chariot.com/](https://www.chariot.com/)
**Virtual Mobility**

6.114 The sustainability of the site will also be complemented by the provision of high-speed broadband which will provide excellent virtual mobility, enabling a number of activities that would have required physical travel to be replaced by on-line services, including working, shopping and socialising.

6.115 Virtual mobility may remove the need to travel at all, and can include for instance, social media, video conferencing, home shopping, internet-based research and working from home.

**Rail**

6.116 There is potential to deliver a rail station that would serve TwinWoods, although it is important to emphasise that the Mobility Strategy does not rely on doing so, nor is the site’s delivery dependent on doing so. The site would deliver a sustainable garden village even without a rail station. Nevertheless, for completeness, an option for a rail station is shown below.
Figure 6.12 – Potential Rail Station at Milton Ernest

6.117 A potential rail station at Milton Ernest that would serve TwinWoods has the following strengths:

- The land is entirely in the control of the development partners;
- Road access to the site is deliverable by the developers; and,
- The location circa 7.1km from Bedford rail station.

6.118 The benefits of a rail service as well as rail connectivity in general are summarised in the following:

- East West Rail could consider using this station instead of Bedford station platforms;
- The closer the new station is to Bedford the lower the cost of a new connection;
- This station could be used as a Thameslink service terminus north of Bedford Station for some services;
- Benefit to platform capacity constraint at Bedford station; and
- Concerted co-operation would be needed from a variety of stakeholders.
There is therefore opportunity for rail, yet providing a rail hub is not required to make the site sustainable.

**Park & Ride/Bus**

Bedford Town Centre Transport Strategy (March 2015) refers to delivery of a Park and Ride in the vicinity of the Great Ouse Way/Sainsbury’s junction. This would intercept traffic from the A6 north and A428 from Northampton. Opportunity to provide a Park and Ride within the site has been considered which would provide another option for TwinWoods residents to travel sustainably into Bedford, as well as intercepting traffic earlier on the A6, hence seeking to reduce overall private car trips into Bedford. This could have an impact on travel to Bedford Modern and surrounding schools in Bedford, with the potential to provide shuttle buses to the schools. Conventional bus services (i.e. service 50) could serve a Park and Ride on the TwinWoods site.

**Area-wide Travel & School Travel Planning**

A comprehensive area-wide Travel Plan will accompany any proposals for development at TwinWoods, which will include a full list of the measures set out within the Mobility Strategy, including investment in PTP. This will encompass the local area to include the settlements of Milton Ernest, Oakley, and Clapham.

Some excellent examples of the beneficial effects of Travel Planning (Appendix E) can be found within the research undertaken by SUSTRANS in relation to behaviour change, travel planning and PTP.

As part of the overall sustainable strategy of the site, it is important to consider journeys made for education purposes. National Statistics suggest that some 50% of all journeys during the morning peak hour are related to education. Of these education trips, travel by car accounts for a fair number of journeys to primary and secondary schools respectively. Whilst the on-site schools will absorb more-or-less all of the development student demand, it is important to consider engagement with existing local schools as part of the area-wide travel plan. There are three secondary school and more primary schools nearby which could be targeted by the area-wide travel plan.
6.124 Bedford Modern draws in a lot of students from outside of Bedford itself, as does Bedford Girls School and Bedford Catholic Schools as well as their respective feeder schools. We understand that these schools do not have a defined catchment area and are known to attract students from a variety of locations. For example, Bedford Modern School provides the following figure to demonstrate where their dedicated coaches pick-up students. This gives a general indication of where students are traveling from.

6.125 There is significant potential to intercept a large number of school trips in the peak periods on the A6, transporting students to Bedford Modern and nearby schools.
6.126 Furthermore, there is scope to contribute towards a new pedestrian footbridge across Manton Lane, which would primarily cater for Bedford Modern students whose sports grounds are on the southern side of Manton Lane (with the school being on the northern side). This would enhance user safety (including for school pupils) and would amend the link capacity on Manton Lane.

**Mobility Strategy**

6.127 In order to deliver the Mobility Strategy, we expect TwinWoods will deliver, in a phased manner, the following measures:

- The rural service centre;
- An accessible and permeable development;
- Active Travel Corridor between TwinWoods and Bedford – walk/cycle/busway;
- Bike-sharing – Electric Bedford Bike (EBB);
- Car Club/Carpooling/Car Sharing;
- Community Concierge/Travel Hub;
- Discounted or free travel passes on the proposed bus services;
- Cycle vouchers;
- Comprehensive Travel Plan;
- PTP including School Travel Plans; and
- Diverting the A6 at Milton Ernest.

6.128 TwinWoods is centrally located within the rural area of the Borough and offers the opportunity to provide a purpose designed, rural service centre. The development will provide for a comprehensive range of services and will become a destination for many people in the area and as such will reduce the need to travel into Bedford.

6.129 As such, and combining the measures contained in the Mobility Strategy, an initial concept plan for the proposed development at TwinWoods is demonstrated in the following and in Appendix F.

Figure 6.14 – Movement at TwinWoods
Summary

6.130 There is huge potential at TwinWoods to deliver a forward-looking Mobility Strategy which can deliver sustainable development north of Bedford.

6.131 This will deliver more cost-effective and more appropriate transport mitigation which can deliver sustainable development. This mitigation will meet the needs of future and existing residents rather than simply building more road space for the sake of the lowest capacity forms of transport (single occupancy vehicles).

6.132 There is not one single measure which will deliver Mobility, but instead a combination of measures which will each provide a contribution towards the overall strategy and provide a gradual change in how people travel.

6.133 The design and layout of TwinWoods is crucial in supporting this behavioural change, providing people with increased flexibility with respect to the time they travel, how they travel, and how they plan their journeys.

6.134 The Mobility Strategy for TwinWoods embraces the latest innovations in transport, but it is not unique, and examples of comparable strategies are already in place in other locations in the UK.

6.135 We have evidenced the economic conduits that underpins all of transport policy, which is that people do react to their conditions and their surroundings. TwinWoods is exceptionally well placed particularly with its southern edge only around 1.4km from Bedford’s built-up area, and has excellent potential to provide and access transport hubs, day-to-day local facilities, and Bedford Town Centre.
7 TRIP CHARACTERISTICS

7.1 Whilst not necessary to establish developability of the site at TwinWoods, we have considered the trip characteristics for the site.

7.2 The fundamental principles of the trip generation and assessment undertaken by Matrix/Vectos and SYSTRA are not different and the results are roughly similar. In any case, with a ‘Monitor and Manage’ strategy any differences do not matter as the results can be mitigated when and if any effects are detected. At this stage, it is simply necessary to demonstrate that TwinWoods is developable.

7.3 In this respect, even considering SYSTRA’s own assessment in isolation to the additional measures proposed as part of TwinWoods’ transport package, the test is ‘is it possible to deliver?’, and the answer for TwinWoods is plainly ‘yes’. BBC appear in their Garden Village Topic Papers to accept that SYSTRA are correct and do not consider anything beyond this, therefore with an agreed ‘Monitor and Manage’ strategy there is no technical barrier to affirming TwinWoods as a developable site.

7.4 Nevertheless, a multi-modal TRICS assessment has been undertaken, in order to understand the impact of the proposed development on the local transport network.

Trip Generation

7.5 The proposals for the development comprise:

- 6,000 residential dwellings;
- Four primary schools – circa 1,100 pupils;
- One secondary school – circa 1,620 pupils;
- B1 land uses – 19,510 sqm;
- A hotel – 500 sqm;
- Retirement Accommodation – 400 dwellings;
- A Medical Centre – 8 GPs;
- Village Centre Retail and Leisure – 2,401sqm.
7.6 The mode split of movement will fluctuate by time of day and day of week. It will be influenced by the measures proposed as part of the proposals, the general approach to transport by BBC in the town centre and north of Bedford, the changes in mind-sets that BBC expect to occur over time, and the degrees of congestion and delay on the car driver network.

7.7 However, for the purpose of assessment this report provides a forecast of the likely trip generation, considering trips by journey purpose (education, employment, leisure), the potential for internalisation, taking account the proposed employment floor space, the local centre and the schools, and the likely levels of inbound and outbound commuting from the proposals. The expected effects of interventions and measures such as PTP, efficient bus provision, cycle hire etc. in influencing travel choice and mode split is also considered.

**Residential Development**

**Trip Rates**

7.8 The starting point for understanding the potential demand from the proposed residential aspect of the development is to derive a total people trip rate. In order to do this the TRICS database has been interrogated to derive appropriate total person trip rates for the residential component of the development. The appropriate parameters were selected as follows:

- Residential – Housing Privately Owned;
- All regions excluding Greater London and Ireland;
- Suburban Area, Edge of Town and Neighbourhood Centre – All Zones;
- Monday – Friday;
- 01/01/10 – 19/04/18; and
- 100 – 805 units.

7.9 The average total people trip rate is as shown in Table 7.1 for the AM and PM peak hours. These sites are smaller than the prospective TwinWoods development, however they provide the most accurate data to determine a forecast for the trip rate.

7.10 The full TRICS output is located in Appendix G.
Table 7.1 – Average Total People Trip Rates (per dwelling)

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Arrivals</th>
<th>Departures</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:00 – 09:00</td>
<td>0.179</td>
<td>0.742</td>
<td>0.921</td>
</tr>
<tr>
<td>17:00 – 18:00</td>
<td>0.57</td>
<td>0.281</td>
<td>0.851</td>
</tr>
</tbody>
</table>

7.11 Applying the trip rates in Table 7.1 to the proposed 6,000 dwellings of the development results in a total people trip demand shown in Table 7.2. These will be partially contained within the site and local area, and partially externally-bound.

Table 7.2 – Total People Trip Demand – 6000 dwellings

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Arrivals</th>
<th>Departures</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:00 – 09:00</td>
<td>1074</td>
<td>4452</td>
<td>5526</td>
</tr>
<tr>
<td>17:00 – 18:00</td>
<td>3420</td>
<td>1686</td>
<td>5106</td>
</tr>
</tbody>
</table>

7.12 We will first consider the journey purpose for these trips, and then their internal / external split and mode split.

Journey Purpose

7.13 The National Travel Survey table NTS0502 provides data for the proportion of trips for different purposes at different hours of the day. A summary of trips by journey purpose in the AM and PM peak periods is provided in Table 7.3.

Table 7.3 – National Travel Survey – Trips by Journey Purpose

<table>
<thead>
<tr>
<th>Start Time</th>
<th>Commuting</th>
<th>Business</th>
<th>Education</th>
<th>Escort education</th>
<th>Shopping</th>
<th>Other personal business and escort</th>
<th>Visiting friends/entertainment/sport</th>
<th>Holiday/Day trip/Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>0800 – 0859</td>
<td>21%</td>
<td>3%</td>
<td>29%</td>
<td>22%</td>
<td>4%</td>
<td>14%</td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>1700 – 1759</td>
<td>33%</td>
<td>4%</td>
<td>3%</td>
<td>2%</td>
<td>12%</td>
<td>20%</td>
<td>19%</td>
<td>7%</td>
</tr>
</tbody>
</table>

7.14 Table 7.3 has been simplified to classify trips into three general journey purposes: commuting, education, and leisure recreation. The proportion of trips for each purpose is summarised in Table 7.4.
Table 7.4 – Trips by Journey Purpose – Commuting, Education, Leisure / Recreation

<table>
<thead>
<tr>
<th>Start Time</th>
<th>Commuting</th>
<th>Education</th>
<th>Leisure / Recreation</th>
</tr>
</thead>
<tbody>
<tr>
<td>0800 – 0859</td>
<td>24%</td>
<td>51%</td>
<td>25%</td>
</tr>
<tr>
<td>1700 – 1759</td>
<td>37%</td>
<td>5%</td>
<td>58%</td>
</tr>
</tbody>
</table>

7.15 Distributing the total number of trips summarised in Table 7.2 by the journey purpose summarised in Table 7.4 results in a breakdown of trips by journey purposes as summarised in Table 7.5.

Table 7.5 – Total Person Trips by Journey Purpose

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Commuting</th>
<th>Education</th>
<th>Leisure / Recreation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arrivals</td>
<td>Departure</td>
<td>Arrivals</td>
<td>Departure</td>
</tr>
<tr>
<td>0800 – 0859</td>
<td>260</td>
<td>1077</td>
<td>550</td>
</tr>
<tr>
<td>1700 – 1759</td>
<td>1264</td>
<td>623</td>
<td>159</td>
</tr>
</tbody>
</table>

Commuting Trips

7.16 Using the data available from the NTS, a judgement has been made that in the AM peak period, 24% of trips are for the purpose of commuting, increasing to 37% of trips in the PM peak period.

7.17 An assessment of the journey to work census 2011 data indicates that currently 10% of people living within the mid-layer super output area (MSOA) ‘Bedford 003’ which contains the site, currently travel to work within the same area. This is a predominantly rural area and therefore it is anticipated that a garden village such as TwinWoods would more closely reflect a small town. As such the same exercise has been undertaken considering north Bedford (built-up area, Mid Layer Super Output Areas (MSOA) ‘Bedford 009, 010, 012’) of which 18% of residents also work within this area. This is approximately representative of the size and nature of the site at TwinWoods, and as such the evidence suggests that approximately 18% of trips for commuting purposes will be internal to the site with complementary land uses. This is a robust figure and given the level of employment proposed and existing within the site (Twinwoods Business Park) there is further potential for internalisation between residential and employment uses.
Therefore, 82% of the trips generated by the residential portion of the development for employment purposes will reach the external mobility network. The internal and external trips associated with commuting are shown below in Table 7.6.

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Internal Arrivals</th>
<th>Internal Departure</th>
<th>External Arrivals</th>
<th>External Departure</th>
</tr>
</thead>
<tbody>
<tr>
<td>0800 – 0859</td>
<td>47</td>
<td>194</td>
<td>213</td>
<td>883</td>
</tr>
<tr>
<td>1700 – 1759</td>
<td>227</td>
<td>112</td>
<td>1036</td>
<td>511</td>
</tr>
</tbody>
</table>

In order to estimate an appropriate mode split for the external employment trips, the ‘Method of Travel to Work’ Census data for 2011 for the MSOA ‘Bedford 003’, which contains the development site, has been analysed although the mode split is anticipated to be substantially lower than this as the site reaches fruition.

An adapted mode split has hence been calculated as the 2011 Census data to represent a robust opening year situation at TwinWoods. There is no rail provision and therefore the mode split of 5% for this has been allocated to car driver. The recorded mode split from the Census data and the adapted mode split are summarised in Table 7.7.

Cognisant that census data only records main mode of travel and does not give any indication of occasional modes - for instance, it does not record whether a person works one day a week from home – this information is likely to overestimate car borne proportion and underestimate active travel and working from home.
Table 7.7 – MSOA Bedford 003 (Residential) – Census Data 2011 – Method of Travel to Work

<table>
<thead>
<tr>
<th>Method of Travel to Work</th>
<th>Original Mode Split</th>
<th>Adapted Mode Split</th>
</tr>
</thead>
<tbody>
<tr>
<td>Train</td>
<td>5%</td>
<td>0%</td>
</tr>
<tr>
<td>Bus</td>
<td>4%</td>
<td>4%</td>
</tr>
<tr>
<td>Taxi</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Motorcycle</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Car Driver</td>
<td>77%</td>
<td>82%</td>
</tr>
<tr>
<td>Car Passenger</td>
<td>4%</td>
<td>4%</td>
</tr>
<tr>
<td>Bicycle</td>
<td>4%</td>
<td>4%</td>
</tr>
<tr>
<td>Walk</td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td>Other Method</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

7.22 Applying the adapted mode split in Table 7.7 to the employment trips results in an external trip demand as summarised in Table 7.8.

Table 7.8 – Mode Split of External Commuting Trips

<table>
<thead>
<tr>
<th></th>
<th>AM (0800-0900)</th>
<th></th>
<th>PM (1700-1800)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Arrivals</td>
<td>Departures</td>
<td>Arrivals</td>
<td>Departures</td>
</tr>
<tr>
<td>Train</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Bus</td>
<td>8</td>
<td>35</td>
<td>41</td>
<td>20</td>
</tr>
<tr>
<td>Taxi</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Motorcycle</td>
<td>2</td>
<td>8</td>
<td>9</td>
<td>5</td>
</tr>
<tr>
<td>Car Driver</td>
<td>174</td>
<td>722</td>
<td>848</td>
<td>418</td>
</tr>
<tr>
<td>Car Passenger</td>
<td>9</td>
<td>36</td>
<td>43</td>
<td>21</td>
</tr>
<tr>
<td>Bicycle</td>
<td>8</td>
<td>32</td>
<td>37</td>
<td>18</td>
</tr>
<tr>
<td>Walk</td>
<td>11</td>
<td>44</td>
<td>52</td>
<td>26</td>
</tr>
<tr>
<td>Other Method</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>213</td>
<td>883</td>
<td>1036</td>
<td>511</td>
</tr>
</tbody>
</table>

Leisure / Recreation

7.23 The NTS data demonstrates that in the AM peak, 25% of journeys are undertaken for the purpose of leisure / recreation (shopping, personal business, visiting friends, holiday / day trips etc), increasing to 58% in the PM peak.

7.24 Whilst Census data does not provide information on travel for leisure/recreation purposes, a reasonable judgement of 18% of residential trips have been internalised to account for the
local centre proposed on site, as was used for commuting trips. This includes provision of the medical centre, retail and leisure uses which are proposed and will be designed to accommodate the day-to-day needs of new residents.

7.25 Therefore, 82% of the trips generated by the development for leisure / recreation purposes will reach the external mobility network. The internal and external trips associated with this are shown below in Table 7.9.

Table 7.9 – Total Person Trips for Leisure / Recreation, Internal and External

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Internal Arrivals</th>
<th>Internal Departure</th>
<th>External Arrivals</th>
<th>External Departure</th>
</tr>
</thead>
<tbody>
<tr>
<td>0800 – 0859</td>
<td>48</td>
<td>197</td>
<td>217</td>
<td>898</td>
</tr>
<tr>
<td>1700 – 1759</td>
<td>359</td>
<td>177</td>
<td>1637</td>
<td>807</td>
</tr>
</tbody>
</table>

7.26 The same adapted mode split which was used to distribute the ‘employment’ trips has also been used to distribute the leisure / recreation trips. This breakdown is as summarised in Table 7.7.

7.27 A breakdown of the external leisure / recreation trips is provided in Table 7.10.

Table 7.10 – Mode Split of External Leisure / Recreation Trips

<table>
<thead>
<tr>
<th></th>
<th>AM (0800-0900)</th>
<th></th>
<th>PM (1700-1800)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Arrivals</td>
<td>Departures</td>
<td>Arrivals</td>
<td>Departures</td>
</tr>
<tr>
<td>Train</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Bus</td>
<td>8</td>
<td>35</td>
<td>64</td>
<td>32</td>
</tr>
<tr>
<td>Taxi</td>
<td>0</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Motorcycle</td>
<td>2</td>
<td>8</td>
<td>15</td>
<td>7</td>
</tr>
<tr>
<td>Car Driver</td>
<td>177</td>
<td>735</td>
<td>1340</td>
<td>660</td>
</tr>
<tr>
<td>Car Passenger</td>
<td>9</td>
<td>37</td>
<td>67</td>
<td>33</td>
</tr>
<tr>
<td>Bicycle</td>
<td>8</td>
<td>32</td>
<td>59</td>
<td>29</td>
</tr>
<tr>
<td>Walk</td>
<td>11</td>
<td>45</td>
<td>82</td>
<td>40</td>
</tr>
<tr>
<td>Other Method</td>
<td>1</td>
<td>4</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>217</td>
<td>898</td>
<td>1637</td>
<td>807</td>
</tr>
</tbody>
</table>

Education

7.28 The NTS data demonstrates that in the AM peak, 51% of journeys are undertaken for the purpose of education, reducing to 5% in the PM peak. Of these journeys, approximately 50%
relate to primary education, and 50% to secondary education. The trips are shown in Table 7.11 below.

**Table 7.11 – Total Person Trips for Education, Primary and Secondary**

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Primary Arrivals</th>
<th>Primary Departure</th>
<th>Secondary Arrivals</th>
<th>Secondary Departure</th>
</tr>
</thead>
<tbody>
<tr>
<td>0800 – 0859</td>
<td>275</td>
<td>1140</td>
<td>275</td>
<td>1140</td>
</tr>
<tr>
<td>1700 – 1759</td>
<td>80</td>
<td>39</td>
<td>80</td>
<td>39</td>
</tr>
</tbody>
</table>

7.29 The inclusion of four primary schools and one secondary school at the site allows accommodation of all expected on-site school students, although it is accepted that a small number will choose to travel off site to attend other schools. On this basis, a large proportion of trips for education purposes will be internal to the site. A judgement that 90% of the residential trips for primary education will remain internal to the development and 85% of the trips for secondary education has been made following the methodology contained in the Matrix Extended Transport Strategy. The proposed schools will be designed to accommodate on-site students, it is expected that the only external trips will be made by teachers and a judgement that approximately 200 teachers will be employed has been made. It is assumed that they will all travel by car: this is a robust assessment.

7.30 **Table 7.12** below shows the internal and external trips generated by the development for education purposes.

**Table 7.12 – Total Person Trips for Education, Internal and External**

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Primary</th>
<th>Secondary</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Internal</td>
<td>External</td>
</tr>
<tr>
<td></td>
<td>Arrivals</td>
<td>Departure</td>
</tr>
<tr>
<td>0800 – 0859</td>
<td>247</td>
<td>1026</td>
</tr>
<tr>
<td>1700 – 1759</td>
<td>72</td>
<td>35</td>
</tr>
</tbody>
</table>

7.31 To achieve a mode split for these trips, the NTS (National Travel Survey) has been used. The mode splits according to age for relevant distances will be applied as provided in **Table 7.13**.
Table 7.13 – NTS Primary Education Mode Split

<table>
<thead>
<tr>
<th>Mode</th>
<th>Mode Split Ages 5 to 10 - Internal</th>
<th>Mode Split Ages 5 to 10 - External</th>
<th>Mode Split Ages 11 to 16 - Internal</th>
<th>Mode Split Ages 11 to 16 - External</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walk</td>
<td>52%</td>
<td>0%</td>
<td>72%</td>
<td>4%</td>
</tr>
<tr>
<td>Bicycle</td>
<td>2%</td>
<td>0%</td>
<td>4%</td>
<td>1%</td>
</tr>
<tr>
<td>Car / van</td>
<td>43%</td>
<td>82%</td>
<td>17%</td>
<td>32%</td>
</tr>
<tr>
<td>Bus</td>
<td>3%</td>
<td>15%</td>
<td>6%</td>
<td>53%</td>
</tr>
<tr>
<td>Other Transport</td>
<td>0%</td>
<td>2%</td>
<td>0%</td>
<td>10%</td>
</tr>
<tr>
<td>All modes</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

7.32 Applying the mode split in Table 13 to the external primary education trips results in a multi-modal trip demand for the purpose of primary school education, as summarised in Table 7.14.

Table 7.14 – Mode Split of External Primary Education Trips

<table>
<thead>
<tr>
<th></th>
<th>AM (0800-0900)</th>
<th>PM (1700-1800)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Arrivals</td>
<td>Departures</td>
</tr>
<tr>
<td>Walk</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Bicycle</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Car / van</td>
<td>23</td>
<td>93</td>
</tr>
<tr>
<td>Private Bus</td>
<td>4</td>
<td>17</td>
</tr>
<tr>
<td>Other transport</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>All modes</td>
<td>27</td>
<td>114</td>
</tr>
</tbody>
</table>

7.33 Applying the mode split in Table 7.13 to the external secondary education trips results in a multi-modal trip demand for the purpose of secondary school education, as summarised in Table 7.15.

Table 7.15 – Mode Split of External Secondary Education Trips

<table>
<thead>
<tr>
<th></th>
<th>AM (0800-0900)</th>
<th>PM (1700-1800)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Arrivals</td>
<td>Departures</td>
</tr>
<tr>
<td>Walk</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>Bicycle</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Car / van</td>
<td>13</td>
<td>55</td>
</tr>
<tr>
<td>Bus</td>
<td>22</td>
<td>91</td>
</tr>
<tr>
<td>Other transport</td>
<td>4</td>
<td>17</td>
</tr>
<tr>
<td>All modes</td>
<td>41</td>
<td>171</td>
</tr>
</tbody>
</table>
Total Residential Demand

7.34 The total external trips resulting from residential demand, combining all journey purposes (employment, education, leisure / recreation) is summarised in Table 7.16.

Table 7.16 – Total Residential Demand

<table>
<thead>
<tr>
<th></th>
<th>AM (0800-0900)</th>
<th></th>
<th>PM (1700-1800)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Arrivals</td>
<td>Departures</td>
<td>Arrivals</td>
</tr>
<tr>
<td>Train</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Bus</td>
<td>43</td>
<td>178</td>
<td>112</td>
</tr>
<tr>
<td>Taxi</td>
<td>1</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Motorcycle</td>
<td>4</td>
<td>16</td>
<td>24</td>
</tr>
<tr>
<td>Car Driver</td>
<td>387</td>
<td>1606</td>
<td>2198</td>
</tr>
<tr>
<td>Car Passenger</td>
<td>18</td>
<td>73</td>
<td>110</td>
</tr>
<tr>
<td>Bicycle</td>
<td>16</td>
<td>66</td>
<td>97</td>
</tr>
<tr>
<td>Walk</td>
<td>23</td>
<td>97</td>
<td>134</td>
</tr>
<tr>
<td>Other Method</td>
<td>7</td>
<td>27</td>
<td>12</td>
</tr>
<tr>
<td>Total</td>
<td>498</td>
<td>2066</td>
<td>2694</td>
</tr>
</tbody>
</table>

Other Land Uses

School Employment

7.35 The on-site schools are of an appropriate size to cater for on-site pupil demand, and therefore there will be no external trips to the schools by students. However, there would be an element of staff demand. A judgement has been made that approximately 200 school staff will travel to the schools in the AM peak period, and from the schools in the PM peak period. These trips have all been assumed to take place in the single peak hours, in order to form a robust assessment despite most trips likely occurring outside of the peak periods.

7.36 As a worst-case scenario, it has been presumed that all employment trips to all schools are undertaken by private car and originate off-site. The school staff vehicular demand is shown in Table 7.17 below.

Table 7.17 – School Employment Vehicle Trips

<table>
<thead>
<tr>
<th>Time Period</th>
<th>External Arrivals</th>
<th>External Departures</th>
</tr>
</thead>
<tbody>
<tr>
<td>0800-0859</td>
<td>160</td>
<td>0</td>
</tr>
<tr>
<td>1700-1759</td>
<td>0</td>
<td>160</td>
</tr>
</tbody>
</table>
Other Land Uses

7.37 The remaining elements of the scheme are as detailed in paragraph 2 above. Total person trip rates for these have been ascertained from the TRICS database, using the same parameters as above, and are given below in Table 7.18 and Table 7.19.

Table 7.18 – Total Person Trip Rates for Other Land Uses (1 of 2)

<table>
<thead>
<tr>
<th>Time Period</th>
<th>B1 Land (per 100sqm)</th>
<th>Food Store (per 100sqm)</th>
<th>Retirement Accom. (per dwelling)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Arrivals</td>
<td>Departure</td>
<td>Arrivals</td>
</tr>
<tr>
<td>0800 – 0859</td>
<td>2.479</td>
<td>0.251</td>
<td>3.777</td>
</tr>
<tr>
<td>1700 – 1759</td>
<td>0.210</td>
<td>2.193</td>
<td>7.016</td>
</tr>
</tbody>
</table>

Table 7.19 – Total Person Trip Rates for Other Land Uses (2 of 2)

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Hotel (per 100sqm)</th>
<th>Medical Centre (per GP)</th>
<th>Local Centre Retail (per 100sqm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Arrivals</td>
<td>Departure</td>
<td>Arrivals</td>
</tr>
<tr>
<td>0800 – 0859</td>
<td>0.259</td>
<td>0.777</td>
<td>8.211</td>
</tr>
<tr>
<td>1700 – 1759</td>
<td>0.547</td>
<td>0.317</td>
<td>3.921</td>
</tr>
</tbody>
</table>

7.38 Applying these trip rates to the proposed sizes of the land uses gives a trip generation as shown in Table 7.20 and Table 7.21 below.

Table 7.20 - Total Person Trip Generation for Other Land Uses (1 of 2)

<table>
<thead>
<tr>
<th>Time Period</th>
<th>B1 Land</th>
<th>Food Store</th>
<th>Retirement Accom.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Arrivals</td>
<td>Arrivals</td>
<td>Arrivals</td>
</tr>
<tr>
<td>0800 – 0859</td>
<td>484</td>
<td>113</td>
<td>84</td>
</tr>
<tr>
<td>1700 – 1759</td>
<td>41</td>
<td>210</td>
<td>74</td>
</tr>
</tbody>
</table>

Table 7.21 - Total Person Trip Generation for Other Land Uses (2 of 2)

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Hotel</th>
<th>Medical Centre</th>
<th>Local Centre Retail</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Arrivals</td>
<td>Arrivals</td>
<td>Arrivals</td>
</tr>
<tr>
<td>0800 – 0859</td>
<td>1</td>
<td>66</td>
<td>392</td>
</tr>
<tr>
<td>1700 – 1759</td>
<td>3</td>
<td>31</td>
<td>295</td>
</tr>
</tbody>
</table>

7.39 Some of the B1 employment, the food store, medical centre, and local centre retail will make up the TwinWoods centre. The trip generation for these was combined and split by mode according to the values in Table 7.7. The internalised trips from the residential dwellings for
employment and for leisure / recreation were removed from these to calculate the number of external trips, by mode, attracted by these land uses. The mode split of these trips is shown in Table 7.22 below.

### Table 7.22 – Mode Split of External Trips attracted by Employment and Town Centre Uses

<table>
<thead>
<tr>
<th></th>
<th>AM (0800-0900)</th>
<th>PM (1700-1800)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Arrivals</td>
<td>Departures</td>
</tr>
<tr>
<td>Train</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Bus</td>
<td>26</td>
<td>18</td>
</tr>
<tr>
<td>Taxi</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Motorcycle</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Car Driver</td>
<td>543</td>
<td>382</td>
</tr>
<tr>
<td>Car Passenger</td>
<td>27</td>
<td>19</td>
</tr>
<tr>
<td>Bicycle</td>
<td>24</td>
<td>17</td>
</tr>
<tr>
<td>Walk</td>
<td>33</td>
<td>23</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>664</td>
<td>467</td>
</tr>
</tbody>
</table>

Furthermore, it is reasonable to determine that 75% of the trips associated with the Retirement Accommodation are internal to the site. These trips were then split by mode according to Table 7.7. The result is displayed in Table 7.23.

### Table 7.23 – Mode Split of External Retirement Accommodation Attracted Trips

<table>
<thead>
<tr>
<th></th>
<th>AM (0800-0900)</th>
<th>PM (1700-1800)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Arrivals</td>
<td>Departures</td>
</tr>
<tr>
<td>Train</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Bus</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Taxi</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Motorcycle</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Car Driver</td>
<td>17</td>
<td>13</td>
</tr>
<tr>
<td>Car Passenger</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Bicycle</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Walk</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>21</td>
<td>16</td>
</tr>
</tbody>
</table>

The trips attracted by the Hotel are considered to all be external, and to all be undertaken by private car.
**Total Development Demand**

7.42 A summary of the total external forecast demand for the opening year of the site, taking into consideration the residential demand and the demand due to supplementary elements of the scheme, is summarised in Table 7.24.

**Table 7.24 – Forecast External Total Demand of Proposals**

<table>
<thead>
<tr>
<th></th>
<th>AM (0800-0900)</th>
<th>PM (1700-1800)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Arrivals</td>
<td>Departures</td>
</tr>
<tr>
<td>Train</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Bus, minibus or coach</td>
<td>70</td>
<td>196</td>
</tr>
<tr>
<td>Taxi</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Motorcycle, scooter or moped</td>
<td>10</td>
<td>21</td>
</tr>
<tr>
<td>Driving a car or van</td>
<td>1109</td>
<td>2004</td>
</tr>
<tr>
<td>Passenger in a car or van</td>
<td>46</td>
<td>93</td>
</tr>
<tr>
<td>Bicycle</td>
<td>41</td>
<td>83</td>
</tr>
<tr>
<td>On foot</td>
<td>58</td>
<td>121</td>
</tr>
<tr>
<td>Other method of travel to work</td>
<td>9</td>
<td>29</td>
</tr>
<tr>
<td>Total</td>
<td>1345</td>
<td>2552</td>
</tr>
</tbody>
</table>

**Future Year Scenario**

7.43 As the Mobility Strategy for TwinWoods is put into place, the mode split for trips will experience a shift.

7.44 Throughout the development the sustainable mobility and behavioural change strategies will be implemented, which will build in momentum as the development creates more and more of a critical mass. As a result of these measures and in combination with a comprehensive Travel Plan, by completion of the development, there will be a further shift in behaviour. This shift will not only account for the influence of each measure but will also reflect the changes in nationwide attitudinal shift and policy changes. The anticipation is that the split of sustainable travel modes will in fact be higher than vehicles. However, for a robust assessment a mode split of 60% vehicle and 40% sustainable travel modes has been considered for all journey purposes other than for education.

7.45 This gives a future split of sustainable and non-sustainable travel shown in Table 7.26 below.
Table 7.26 – Forecast Future Mode Split

<table>
<thead>
<tr>
<th>Forecast Mode Split</th>
<th>Opening Year</th>
<th>Completion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Car Driver, Motorcycle, Taxi</td>
<td>81.8%</td>
<td>60%</td>
</tr>
<tr>
<td>Sustainable Travel</td>
<td>18.2%</td>
<td>40%</td>
</tr>
</tbody>
</table>

7.46 Applying this to the expected number of external trips from all elements of the development except education and school employment results in a forecast number of external vehicle movements by the development completion year as displayed in Table 7.27 below.

Table 7.27 – Forecast External Total Vehicle Trip Demand, Completion Year

<table>
<thead>
<tr>
<th></th>
<th>AM (0800-0900)</th>
<th>PM (1700-1800)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Arrs</td>
<td>Dep</td>
</tr>
<tr>
<td>Residential</td>
<td>296</td>
<td>1213</td>
</tr>
<tr>
<td>Non-Residential</td>
<td>572</td>
<td>293</td>
</tr>
<tr>
<td>Total</td>
<td>869</td>
<td>1506</td>
</tr>
</tbody>
</table>

SYSTRA-Vectos Methodology Comparison

7.47 The SYSTRA methodology detailed within the A6 Corridor Study (April 2017) is derived from 2021 baseline flows from the SATURN model and traffic counts, and assumes that three garden village sites will be promoted in parallel. SYSTRA also omit the proposed Milton Ernest bypass, incorporated within the TwinWoods mitigation strategy.

7.48 The SYSTRA output is based upon multiple 2045 scenarios which consider the impact of 12,500 dwellings, via a worst-case Reference Case and Core Forecast – the latter encompassing a number of mitigation strategies, such as reductions in background growth, and uptake in the use of sustainable travel modes.

7.49 The Vectos approach, refining SYSTRA’s model, thus results in a higher number of relative trips from TwinWoods (albeit reduced from SYSTRA as a result of the reduction in total dwellings from the omission of the other garden villages), highlighted within Table 7.28. The methodology also highlights a slightly higher impact on the A4280 westbound, offset however, by a decrease in on the Clapham Road roundabout junction to the south.
Table 7.28 – Methodology Trip Rates Comparison

<table>
<thead>
<tr>
<th></th>
<th>AM In</th>
<th>AM Out</th>
<th>PM In</th>
<th>PM Out</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYSTRA</td>
<td>0.129</td>
<td>0.338</td>
<td>0.307</td>
<td>0.130</td>
</tr>
<tr>
<td>Vectos</td>
<td>0.065</td>
<td>0.271</td>
<td>0.371</td>
<td>0.183</td>
</tr>
</tbody>
</table>

7.50 The assumptions contained within the differing methodology result in differing forecast trips; however, the flexible approach of mitigation measures (via the proposed Monitor & Manage process for TwinWoods) will consider actual flows and ensure that mitigation measures are flexible and proved to be fit-for-purpose.

7.51 The general substance of the methodology is comparable, with the Vectos output similar to that within the 2045 Core Forecasts. Vectos further refine SYSTRA’s internalisation factors, considering site-specific employment areas, and the closer proximity of the development site to the town centre. However, it is important to emphasise that the SYSTRA methodology demonstrates that a garden village at TwinWoods is developable. Moreover, this would be facilitated by our proposed Monitor & Manage approach.

**Comparative Trip Assessment**

7.52 The Garden Village Topic Paper (September 2018), which has been updated from the January 2018 version for the new emerging Local Plan to 2030, comments that SYSTRA\(^\text{20}\) identify that TwinWoods would generate in the order of 2,500 two-way vehicular trips travelling into and out of Bedford in each peak period on the A6. This report notes that this is an impact of 60% on this part of the A6 in the 2035 scenario. It is not clear however, if SYSTRA have undertaken any technical assessment considering TwinWoods in isolation. Whilst an impact of 2,500 vehicles on the A6 would represent a 60% increase in traffic, none of the potential internalisation or mode shift judgements set out by SYSTRA have been applied purely to the TwinWoods trip demand.

7.53 Nonetheless, applying the updated trip generation set out in the former part of this section in the same manner, this would be approximately a 42% impact on the A6 north of Bedford. Given the scale of the development and benefits it can bring to the local area including

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\(^{20}\) 30 – New Settlement Site Appraisal Summary

TwinWoods, Bedford

October 2018
Bedford, this is not an unacceptable impact on the A6. Particularly cognisant of national policy which advocates promotion of sustainable travel modes above the private vehicle and emphasises that the purpose of transport and health policy is not to protect the convenience of the private car driver.

7.54 Despite this judgement, SYSTRA rightly do not assert that TwinWoods is not developable on transport grounds. The summary of TwinWoods contained within the Garden Village Topic Paper (September 2018) is not informed by any updated technical evidence undertaken by Systra or otherwise. It refers to the SYSTRA’s Site Appraisal Summary (January 2018) but this is unchanged from the January 2018 topic paper which, as noted, does not gainsay our position that TwinWoods is developable. Therefore, it is entirely unjustifiable that BBC now conclude TwinWoods an unsuitable garden village alternative when it was previously considered a highly desirable site and in circumstances where the only reason given not to support its allocation was the then proposed delivery of a rail station at the site at Colworth (which has since been abandoned by BBC) which, in any event, is not necessary at TwinWoods for the various reasons set out above.

**Highway Assessment**

7.55 A number of key junctions have already been considered in terms of the impact that the TwinWoods development could have on the function of the highway network. These comprise the following junctions (along the A6 wider corridor) that were considered in the Matrix Extended Transport Strategy (March 2017).

7.56 We emphasise that the highway assessment is a means of assessing the impact of future development and not a tool to determine the appropriateness of a developable site.
Figure 7.1 – Key Junctions
8 SUMMARY AND CONCLUSION

8.1 Vectos is retained by Bedfordia Developments Ltd & Marcol Industrial Investments to assist with the promotion of a new garden village at TwinWoods, east of Milton Ernest in Bedfordshire. The scheme has the potential to deliver around 6,000 homes in a sustainable location that would form a natural outlaying settlement to Bedford.

8.2 BBC needs more housing (including affordable homes), and this development seeks to provide for this.

8.3 The intention is to create a sustainable socially inclusive community with these overriding principles embodied within the indicative masterplan for the site.

8.4 The site has been designed with a policy compliant transport hierarchy, with active travel at the top. There will be significant investment in this regard.

8.5 Development at TwinWoods will achieve excellent public transport accessibility and through the implementation of the Mobility Strategy, the scheme will introduce a package of sustainable travel measures to influence travel behaviour from the outset. In combination with this, a number of investments in infrastructure improvements are identified as potential schemes to aid in the movement of all people in the surrounding area, and area-wide travel planning is proposed to supplement the measures.

8.6 BBC is wrong to state in their September 2018 Garden Village Topic Paper that more information is required (paragraph 9.6). This statement is predicated upon BBC’s flawed approach to its assessment of reasonable alternatives for a garden village by reference to a test of deliverability as opposed to developability. Therefore, this information is simply not needed to determine the developability of TwinWoods.

8.7 Furthermore, a ‘Monitor and Manage’ strategy (which has recently been endorsed elsewhere by the Secretary of State) will be provided in order to provide reactive mitigation where and when necessary and to ensure delivery of a sustainable development.
Conclusion

8.8 The project at TwinWoods would provide necessary housing in a long-term timeframe. It is designed to maximise social inclusion and effect a step change in sustainable travel thinking. It has transport sustainability benefits for the existing local community, and is a well-located sustainable site which, in transport terms, is policy compliant.

8.9 With the changing nature of travel, accounting for generational changes in mindsets and the changing priorities reflected in policy, the potential to create sustainable travel habits for all residents from the outset is excellent. Particularly given the long-term timeframe, the delivery of this site could in reality experience fewer vehicular trips than forecasted using data from existing sites.

8.10 Therefore, in transport terms, the site is developable (within the meaning of the Framework).
Project team:
Bedfordia
Marcol
Lichfields
Vectos

Contact details:
Matthew Spry
Senior Director, Lichfields
matthew.spry@lichfields.uk
020 7837 4477